US Army Corps of Engineers
Nashville District

Tennessee Valley Authority

COOPERATING AGENCY

ENVIRONMENTAL ASSESSMENT

Channel Maintenance Dredging and Open Water Disposal Between Hiwassee River Miles 10 – 18 McMinn and Bradley Counties, Tennessee

February 2007

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1. INTRODUCTION.

1.1. Study Authority. The Rivers and Harbors Act of July 3, 1930,ch. 847, 46 Stat. L. 927 (1930) authorized the permanent improvement of the Tennessee River to a navigable draft depth of nine feet at low water from the mouth of the Tennessee River to Knoxville, Tennessee. The Tennessee Valley Authority (TVA) Act of 1933 (16 U.S.C. §§ 831-831ee) authorized TVA to provide a nine-foot draft channel with a two-foot overdraft for safety, in the Tennessee River from Knoxville to its mouth. Since passage of the TVA Act of 1933, the Corps of Engineers (Corps), in cooperation with TVA, has maintained navigation channels on TVA projects by performing necessary maintenance dredging operations. This division of responsibility is outlined in a Memorandum of Agreement between the Corps and TVA dated October 26, 1962. TVA is a cooperating agency for this NEPA process.

1.2. Background. A Final Environmental Impact Statement (FEIS) covering open channel maintenance for the Tennessee River and tributaries was filed with the President's Council on Environmental Quality on March 7, 1976. The FEIS contains information concerning the Tennessee River and maintenance dredging and disposal sites occurring within the Tennessee River watershed including the Hiwassee River site (Corps, 1975). Like virtually all major river systems in the United States, the Tennessee River has been altered by human activities to serve the needs of a modern, industrial society.

Chickamauga Lock and Dam is located at Tennessee River Mile (TRM) 470.8. The lock was opened for navigation in 1940. Backwater from Chickamauga Lake provides navigation on the Hiwassee River from its confluence on the Tennessee River (TRM 499.4) to the major ports of Charleston and Calhoun, Tennessee near Hiwassee River Mile (HRM) 21 (TVA, 2006 Webpage). The Nashville District operates the locks and maintains an open channel for navigation for 763 miles in the Tennessee main stem and major tributaries. Open-channel maintenance activities include periodic dredging of 15 areas including the proposed site on the Hiwassee River. Specific dredging locations and dredge material quantities vary from year to year depending on the rate of shoaling. Dredged material is routinely disposed in open-water close to the maintenance dredge site. The proposed action is comprised of all activities associated with open-channel maintenance in the Hiwassee River between HRM 10-18 near Ledford Island in Bradley and McMinn Counties, Tennessee. This river segment nests within the Hiwassee River Hydrologic Unit Code (HUC) 60200020602 which covers approximately HRM 10.5 to 19 (TDEC, WS, 2003).

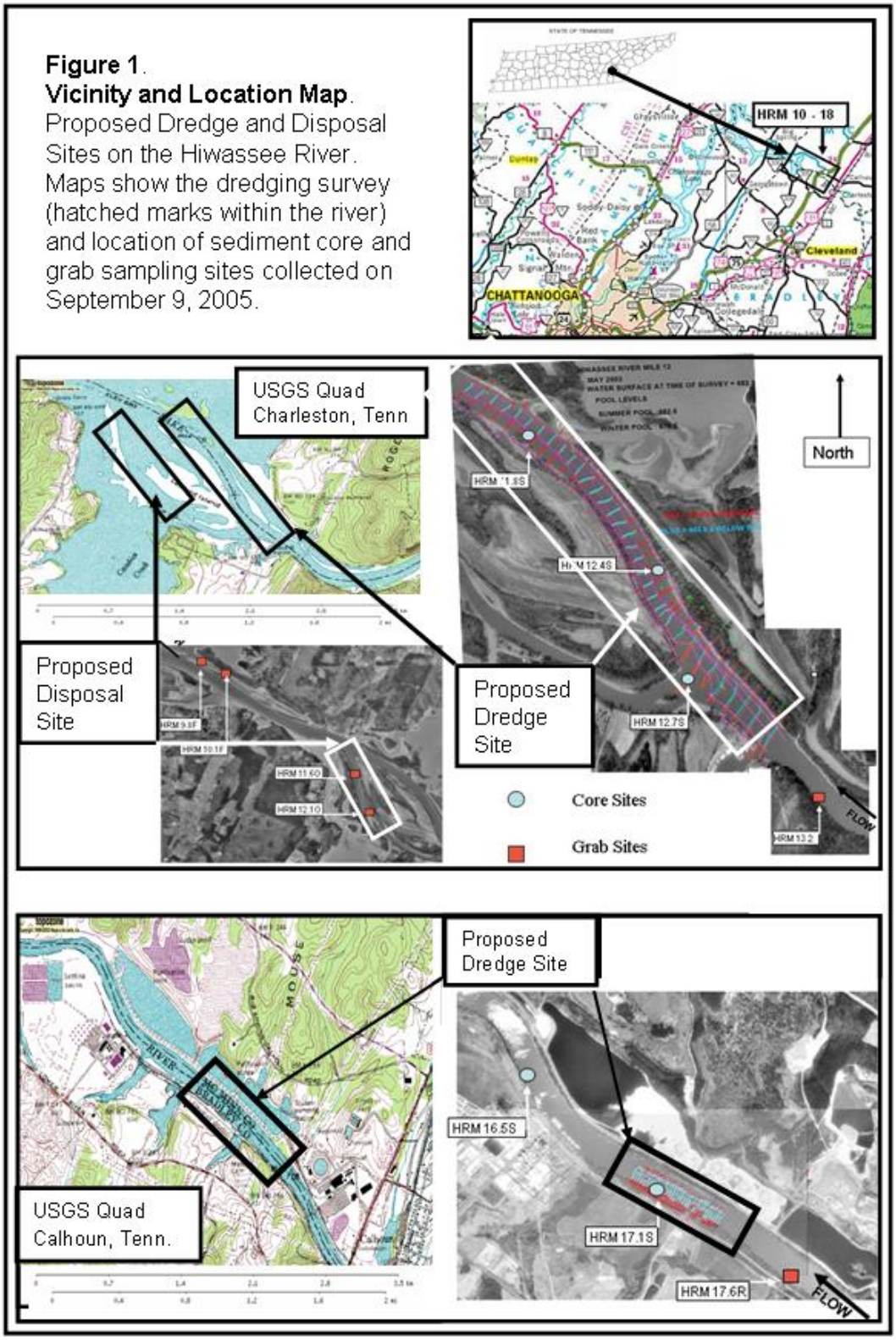
The lower half of the Hiwassee River watershed (HRM 0 – 64.9) including the maintenance dredge and disposal sites is located in Tennessee while the upper half of the watershed is located in North Carolina and Georgia (TDEC, 2006, 305B). The designated uses established by the State of Tennessee for the Hiwassee River between HRM 0-34.4 are Domestic Water Supply, Industrial Water Supply, Fish and Aquatic Life, Recreation, Livestock Watering and Wildlife, Irrigation, and Navigation (TDEC, 2004). This river segment supports all its designated uses except for approximate river segment HRM 13.0-18

which is listed in the 2004 Tennessee Rivers Assessment database as not supporting recreational use due to pathogens.

1.3. Purpose and Need. The Hiwassee River in the vicinity of Ledford Island is subjected to constant bed load movement resulting in recurring shoaling problems in the navigation channel that create a hazard to watercraft. The historical maintenance site between HRM 11.5-13.0 in the main channel has been dredged repeatedly, beginning in 1974 and again in 1980, and 1993-4. The dredged sediment was placed each time in the historic disposal site in the back chute of Ledford Island. A recent bathymetric survey revealed that the historic maintenance dredge site (HRM 11.5-13.0) and a new maintenance site between HRM 16.5-17.5 were shoaling and creating potential navigation hazards. The FEIS can be referenced for information on navigation and overall impacts of maintenance dredging activities in the Tennessee River watershed.

This Environmental Assessment (EA) evaluates the specific impacts of the proposed dredging between HRM 11.5 - 13.0; and 16.5 - 17.5, and open water disposal of the dredged material in the back chute of Ledford Island (also known as Raht Island) between HRM 11.6 - 12.1 (Figure 1). Maintenance dredging is necessary to restore an adequate navigational depth of a required 9 feet draft plus 2 feet of overdepth for safety and low winter pool fluctuations. The channel grade elevation in feet mean sea level (EL) between HRM 0.0-16.0 is EL663.0; and between HRM 16.0-20.4 is EL664.0 which is 11 feet below Chickamauga's winter minimum pool of EL 675.0. (Corps. 2003)

Figure 1.
Vicinity and Location Map.
Proposed Dredge and Disposal Sites on the Hiwassee River. Maps show the dredging survey (hatched marks within the river) and location of sediment core and grab sampling sites collected on September 9, 2005.



1.4. Studies. In 1993 an Environmental Assessment for dredging near Ledford Island titled Channel Maintenance Dredging Hiwassee River Mile 11.5-13.0, McMinn and Bradley Counties, Tennessee was completed and a Finding of No Significant Impact (FONSI) was signed on December 15, 1993. On September 9, 2005, a sediment survey was conducted to evaluate the quality of the sediment in the proposed dredge and disposal sites. The 2006 report is titled, Sediment Survey Report, Sediment Study, Hiwassee River Segment Miles 10 – 18, McMinn and Bradley Counties, Tennessee**.** Sediment data were evaluated by TVA, U.S. Army Corp Of Engineers, Engineer Research and Development Center (ERDC), and the Nashville District (Corps). The conclusion is the sediment did not pose a threat to the biota and could be dredged and placed in an open-water disposal site. Concurrence with this finding is anticipated from EPA.

2. ALTERNATIVES CONSIDERED.

2.1. General. Alternative 1, No Action; and Alternative 2, Open Channel Maintenance Dredging and Disposal, have been identified as viable alternatives and are considered in detail under this evaluation. Alternative 3, Upland Disposal, is not possible at this time. Four additional alternatives are described and have been determined as impractical at this time and are not discussed in detail.

2.2. Alternative 1, No Action. A No Action decision would result in no maintenance dredging on the Hiwassee River. At some point, as the navigation channel continues to fill and the shoals become shallower, navigation upstream of HRM 11.0 would be suspended.

2.3. Alternative 2, Open Channel Maintenance Dredging and Disposal. This action would dredge approximately 25,000 cubic yards of fine sand and silt adjacent Ledford Island (HRM 11.5-13.0), and 12,000 cubic yards from the new shoaling area along the left descending bank (LDB) between 16.5-17.5 from the Hiwassee River navigation channel (Appendix A, Figure 1). A clamshell dredge would remove sediment and place it in a split-hulled dump scow for open-water disposal in the historic disposal area in the back chute of Ledford Island. The navigation channel would be dredged to a channel grade of EL 663.0 between HRM 11.5-13.0, and a channel grade of EL 664 between HRM 16.5-17.5, which is about 11 feet below the Chickamauga minimum winter pool of EL 675.0 (USACE, 2003).

2.4. Alternative 3, Upland Disposal. This alternative would involve construction of a confined disposal facility (CDF) for containment of dredged material on property adjacent the river and in the vicinity of the site. The CDF is essentially a settling pond, made with earth dikes, that allows the dredged material to dry over a period of time. Excess water either flows from the pond or evaporates. Dredged material would be placed in the CDF with a suction dredge.

Construction of a CDF would require the purchase of property in the vicinity of the site. Property within the project area includes residential and commercial property, wildlife management areas, and, farmland. The costs of purchasing or leasing property, the construction of dikes, and rental or purchase of suction dredging equipment would require a few years and a sizeable capital investment and are well beyond the scope of the proposed maintenance activity at this time.

Use of an existing private CDF adjacent the Hiwassee River was considered, however, use of a private facility would transfer all responsibility for maintenance and quality of the site from the private sector to

the federal government. Trying to segregate material disposed by the government from material disposed by the private sector within a shared CDF is not practical.

Many Native American sites are located in the Hiwassee River floodplain and islands. Construction of a CDF has a high risk of disturbing significant known and undiscovered cultural sites. In view of these practical obstacles, this alternative is no longer considered at this time.

2.5. Alternative 4 Change Reservoir Operations to Raise Minimum Pool Level. This alternative would eliminate the immediate need for maintenance dredging by raising the minimum pool by 2 feet. It would, however, greatly impact TVA's ability to control the flood storage level at Chattanooga, Tennessee. In addition, this would only grant a few years reprieve before the area once again required attention. As a result, this is not a practicable alternative and will not be considered.

2.6 Alternative 5 - Open Water Disposal at a New Open Water Location. This alternative would involve clamshell dredging and transport of the material by dump scow to an in-water disposal further downstream of Ledford Island. Alternate disposal sites were considered at HRM 9.9 and 10.1 along the right descending bank (RDB). These sites are located in the mouth of Price Creek and adjacent the river mainstem. These locations did not offer high flow protection and were very shallow. Disposal at these locations raised navigation concerns in the embayment. As a result, this is not a practicable alternative and will not be further considered.

2.7. Alternative 6 - Privatization of Channel Maintenance. Commercial towing companies could employ private dredging companies to perform channel maintenance work on the Hiwassee River. However, this action would encounter the same environmental issues and would encourage inconsistent dredge and disposal operations by many vendors. The Nashville District, Corps of Engineers, is responsible for performing maintenance dredging in the federally authorized navigation channel on the Tennessee River and its tributaries in accordance with the 1962 Memorandum of Agreement between TVA and the Corps of Engineers. The Corps has access to the appropriate equipment, personnel, and historical records of previous maintenance activities. Use of a private dredging operation is considered impracticable and is not further considered.

2.8 Environmental Commitments, Permits, Approvals, and Compliance.

Clean Water Act

The Corps of Engineers does not issue itself a Section 404 permit; however, it follows the same process as all other applicants. A Section 404(b) (1) evaluation has been completed (Appendix C) and a Public Notice (PN) has been circulated for public and agency review (Appendix D). Pursuant to Section 401 of the Clean Water Act, Water Quality Certification (Appendix E)) in the form of an Aquatic Resource Alteration Permit (ARAP) was requested the State of Tennessee. Issuance of WQC is anticipated on completion of the PN comment period.

National Pollutant Discharge Elimination System (NPDES) Stormwater Permit

An NPDES Stormwater permit is not required for open water disposal.

Endangered Species Act

There are no known federally listed threatened or endangered species in the project area. All alternatives can, therefore, support a No Effect determination. The U.S. Fish and Wildlife Service

concurs with this determination as noted in correspondence dated July 10, 2006 (Section 5.1 and Appendix B).

Fish and Wildlife Coordination Act. Under this Act, Federal agencies are required to consult and coordinate water resource project proposals with the USFWS and State wildlife agencies. This project has been coordinated with the USFWS, TWRA and TDNA (Section 5.1 and Appendix B). Agency recommendations have been considered and adopted, as appropriate.

National Historic Preservation Act. The State Historic Preservation Officer (SHPO) of Tennessee has been consulted. In a letter dated June 29, 2006, the SHPO concurred with the Corps findings that there are no National Register of Historic Places listed or eligible properties affected by this undertaking, and has no objections to proceeding with the project.. (Section 5.1 and Appendix B)

Resource Conservation and Recovery Act
All alternatives are in compliance with the Resource Conservation and Recovery Act (RCRA).

Comprehensive Environmental Response, Compensation, and Liability Act
No Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites were identified within the project boundaries.

Farmland Policy Protection Act
No agricultural lands or Prime and Unique Farmlands are located in the project areas.

Executive Order 11988 - Floodplain Management
None of the alternatives considered will increase the risk of a "base flood".

Clean Air Act Conformity Rule
Currently the site is considered in attainment with regard to the National Ambient Air Quality Standard (NAAQS). None of the alternatives would have a noticeable effect on air quality.

Executive Order 12898 - Environmental Justice
None of the alternatives would have a disproportionate impact on minority or low-income populations.

2.9 Summary Tables. Table 1 depicts the status of the environmental commitments and necessary permits and approvals. Table 2 considers the environmental and economic impacts associated with each alternative. Table 2 is derived from § 122 of P.L. 91-611 together with various project specific concerns. Table 3 evaluates the occurrence of possibly significant impacts as defined by the National Environmental Policy Act, commonly referred to as NEPA (40 C.F.R. §1500-1508). NEPA allows for a Finding of No Significant Impact (FONSI) if a selected alternative will not cause a significant impact, either adverse or beneficial, on the quality of the human environment listed in Table 3. The definition of significance and the source of the ten parameters may be found at 40 C.F.R. 1508.27.

Table 1. – Environmental Commitments, Permits, or Approvals

Environmental Commitment, Permit, or Approval	Status
Section 401 of the Clean Water Act	401 In Process
Section 404 of the Clean Water Act	In Process
Section 10 of the Rivers and Harbor Act	Not Applicable to Corps Actions
NPDES Stormwater Permit	Not Applicable
Endangered Species Act	Compliant
Fish and Wildlife Coordination Act	Compliant
Cultural Resources Coordination	Compliant
Resource Conservation and Recovery Act	Not Applicable
CERCLA	Not Applicable
Farmland Policy Protection Act	Not Applicable
Executive Order 11988 - Floodplain Management	Compliant
Clean Air Act Conformity Rule	Compliant
Executive Order 12898 - Environmental Justice	Compliant

Table 2. - Environmental and Economic Impacts and Expected Effects

Environmental and Economic Impacts	**Alternative 1 No Action**	**Alternative 2 Open Channel Maintenance Dredging and Disposal**
Operation and Maintenance Costs	NE	Negative Effect
Forest Resources	NE	NE
Wildlife Resources	NE	NE
Aquatic Resources	NE	NE
Shoreline Erosion	NE	NE
Farms	NE	NE
Economics	Long Term-Negative Effect	Maintain Existing Condition
Wetland Impacts	NE	NE
Water Quality – Short Term	NE	Negative Effect
Water Quality – Long Term	NE	NE
T & E Species	NE	NE
Cultural Resource	NE	NE
Environmental Justice	NE	NE
Air Quality	NE	NE
Noise	NE	NE
HTRW	NE	NE
Flood Damage Reduction	NE	NE
Aesthetics	NE	NE
Public Facilities	Long Term-Negative Effect	Maintain Existing Condition
Public Services	NE	NE
Employment	Long Term-Negative Effect	Maintain Existing Condition
Tax Values	Long Term-Negative Effect	NE
Property Values	Long Term-Negative Effect	NE
Community Cohesion	Long Term-Negative Effect	Maintain Existing Condition
Displacement of People	NE	NE
Displacement of Businesses	Long Term-Negative Effect	Maintain Existing Condition
Disrupt of Comm. Growth	Long Term-Negative Effect	Maintain Existing Condition
Disrupt of Regional Growth	Long Term-Negative Effect	Maintain Existing Condition
Floodplain	NE	NE
Recreation	Long Term-Negative Effect	Maintain Existing Condition
Safety	Long Term-Negative Effect	Maintain Existing Condition
Navigation	Long Term-Negative Effect	Maintain Existing Condition

* **NE – No Effect**

Table 3. – Determination of Significance of Alternatives

Environmental and Economic Impacts	No Action	Open Channel Maintenance Dredging and Disposal
1) Will the alternative cause any significant effects, either beneficial or adverse?	Yes. See Items 8 and 10.	No. It will maintain the current status quo.
2) Will the proposed alternative significantly affect public health or safety?	Yes. Continued shoaling would create a hazard to navigation.	No. It will maintain the current status quo.
3) Will the proposed alternative affect any unique characteristics of the geographic area, such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?	No.	No.
4) Is the alternative likely to be highly controversial?	No.	No.
5) Are there any significant possible effects on the human environment that are highly uncertain or involve unique or unknown risks?	No.	No.
6) Will the alternative establish a precedent for future actions with significant effects or does it represent a decision in principle about a future consideration?	No.	No.
7) Is the alternative related to other actions with individually insignificant but cumulatively significant impacts?	No.	No.
8) Will the alternative have a significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss of significant scientific, cultural, or historical resources?	Yes. The action would eventually lead to the closure of navigation on the lower Hiwassee River.	No. It will maintain the current status quo.
9) Will the alternative adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973?	No.	No.
10) Does the alternative risk a violation of Federal, state, or local law, or requirements imposed for the protection or the environment?	Yes, failure to maintain navigation would be a violation of the Clean Water Act § 303(c). The lower Hiwassee River would no longer support its existing navigation use.	No. It will maintain the current status quo.

3. ENVIRONMENTAL SETTING (BASELINE CONDITIONS).

3.1. General. Before 1900, the development of navigation on the Tennessee River was constrained by physical obstructions, by a comparatively low level of economic development in the areas served by the river, and by an undeveloped transport technology. Physical obstructions such as gravel, sandbars, and shoals were the most serious; other obstructions included rocks, ledges, and snags. Variations in stream flows and depths added to the hazards.

Between 1900 and 1933 navigation on the Tennessee River was characterized by isolated attempts to solve problems associated with navigation hazards in specific portions of the river. When the Tennessee Valley Authority was created in 1933 it marked the beginning of a systematic approach for navigational needs.

Chickamauga Lake was authorized under the Tennessee Valley Authority Act of 1933. This Act authorized a navigation project beginning near Paducah, Kentucky, and continuing to Knoxville, Tennessee, by the construction of high lift dams with locks. The main stem river channel from Paducah to Knoxville was completed in 1945. Chickamauga Lake and Dam was completed in 1940. The impoundment of Chickamauga Lake and Dam at TRM 470.8 permanently altered the Tennessee River upstream of the dam. The backwaters of Chickamauga Lake provide adequate depths for navigation on the Hiwassee River. Aquatic characteristics such as water quality and quantity, water uses, sediment composition, aquatic and shore biota, and floodplain character were all changed by the impoundment. The following sections consider existing conditions within the project area on the Hiwassee River.

3.2. Threatened or Endangered Species. Presently, there are no federally listed or proposed endangered or threatened species are located in the impact footprints of the proposed action (Section 1.4 and Appendix B). According to TVA records, Snail Darters (Percina tanasi) have been collected at a TVA fixed-station site at HRM 37, well upstream the proposed project footprint (TVA, 1999). Spawning occurs on sand and gravel shoals from December to April. The fish feed primarily on small Pleuroceridae (river snails). These fish have been considered transplanted populations established by TVA in the mid 1970's (TVA, 1999).

3.3. Overall Forest and Vegetative Condition. The lower half of the Hiwassee River Watershed is located within Tennessee. The upstream half of the watershed is located in North Carolina and Georgia. Terrestrial areas within the project river reach (HRM 10-18) contain agricultural, commercial, private and state properties. Little remains of the original forest or vegetation. Riparian structure is typical of the region and includes a variety of hydrophytic plants and trees including sycamores (Platanus occidentalis), cottonwoods (Populus deltoides), and green ash (Fraximus pennsylvanica). White oak forests and bottomland oak forests are also present (TDEC, 2003).

3.4. Overall Wildlife Habitat Condition. The land surrounding the mainstem of the Hiwassee River in the project reach (HRM 10-18) is disturbed. Commercial harbors, industry, towns, and private homes line much of the river front. Rogers Creek (HRM 12.1), Candies Creek (HRM 12.3), South Mouse Creek (HRM 15.6) and Ledford Island (HRM 12.0) Wildlife Management Areas (WMA) provide fishing and hunting opportunities. The first three WMAs are located on tributaries to the Hiwassee River between miles 10-18 while Ledford Island WMA is an island in the mainstem of the Hiwassee River. Waterfowl food plots are actively managed by TWRA on Ledford Island.

The Tennessee DNA noted that a Heron Rookery is reported near HRM 10.7. Sandhill cranes use the Hiwassee River Refuge downstream of the State Route 58 Bridge near HRM 7.

3.5. Wetlands. Forested/shrub wetlands are present along the edges of Ledford Island adjacent the open-water back chute channel behind Ledford Island. Forested wetlands are also present on islands in the mouth of Candies Creek which enters just upstream of the proposed disposal site behind Ledford Island (USFWS, NWI, 2006). Extensive aquatic bed wetlands are also present in this area (Martin High, TVA, 2006). Marshes and wetlands surround the riparian mainstream of the Hiwassee River and provide hunting and fishing opportunities (Wikipedia, 2006).

3.6. Fish and Aquatic Life. Pocketed riparian marshes and wetlands along the Hiwassee River provide habitat for fishing opportunities (Wikipedia, 2006). The lower Hiwassee River (Bradley and McMinn Counties) supports a cool water fishery. The lower Hiwassee contains many broad bays and flats that support largemouth (Micropterus salmoides), smallmouth (Micropterus dolomieu), striped (Morone saxatilis), and white bass (Morone chrysops); sauger (Sander canadensis) and yellow perch (Perca flavescens) (Southeast Tennessee, 2006).

On September 9, 2005, eleven sediment samples were collected for possible contaminants on the Hiwassee River between river miles 10-18. Sediment was composed of fine-grained sand, silt, clay, and organic detritus. A single Asiatic clam (Corbicula fluminea) was retrieved from a grab sample in the back chute of Ledford Island. No other benthic organisms were collected from the sediment during this survey. Fine sand, silt, and clay is not considered optimal benthic or fish spawning and nesting habitat.

3.7. Water Quality. The Tennessee Department of Environment and Conservation's Division of Water Pollution Control lists a portion of the mainstem of the Hiwassee River in the 2006 303d list. The list identified 7.7 miles on the Hiwassee River mainstem impaired due to Escherichia coli bacteria. The Tennessee Stream assessment database (2004) provided a map that shows that the river segment between HRM 13-18 contains unacceptable levels of Escherichia coli, which impairs recreation use. However, the stream segment between HRM 0 – 13, including the back chute of Ledford Island supports all designated uses (no impairment). Currently there are no swimming advisories listed for the Hiwassee River (TDEC, 2006).

There are three major discharges within the Hiwassee River project segment (10-18). Cleveland Utilities Sewer Treatment Plant, Olin Corporation, and Bowater Newsprint have discharges at HRM 15.4; HRM 15.8, 16.6, 16.8; and HRM 15.0, 16.5, 18.1, and 22.7 respectively. Calhoun School has a minor discharge to HRM 19.1 (TDEC, 2003).

3.8 Contaminated Sediment. Based on sediment particle size (EPA and Corps, 1998) contaminants are not likely to adhere to large sediment particles (sand, gravel, and cobble). Contaminants have been associated with fine soil particles (clay) which may concentrate in areas of fine sediment deposition. The predominant soil surrounding the project segment (HRM 10-18) is loam (TDEC, 2003). By definition loam is a friable soil composed of a mixture of sand, clay, silt, and organic matter. Based on this information, sediment within the project reach would be expected to consist of small particles. Based on the findings of the sediment survey between HRM 10-18, gravel and cobble are not characteristic substrate for this river segment of the Hiwassee River.

In the 1990's, fish were collected between approximately HRM 7 - 21. Fish tissue was analyzed for possible metals, mercury, polychlorinated biphenyls (PCBs), dichloro-diphenyl-trichloroethane (DDT), Chlordane, Hexachlorobenzene (HCB), Dieldrin, and Dioxin contamination (TDEC, 1997). Due to historical contaminant concerns, a sediment survey was conducted by TVA and the Corps on September 9, 2005. Sediments were collected from the proposed dredge and disposal sites. Areas that have no record of dredging and, thus, have not been cross contaminated (reference sites) were also sampled. The material consisted of fine-grained material (sand, silt and clay) with notable amounts of organic material (decaying plant matter). Sediment samples were analyzed for over ninety analytes covering a number of semivolatile organic compounds, organic volatile compounds, pesticides, metals (including mercury), Dioxins and Furans, PCBs, Total Organic Carbon (TOC), and particle size. Currently and historically, the Hiwassee River has not been posted for any of these contaminants.

3.9 Hazardous, Toxic, and Radioactive Waste (HTRW). Three facilities along the Hiwassee River report hazardous waste activities however, there are no potential hazardous waste sites that are part of Superfund within the project area (EPA, 2006).

3.10 Air Quality. Currently, the Hiwassee River segment between HRM 10 – 18 is considered in an attainment area with regard to the National Ambient Air Quality Standard (NAAQS). Minimal impact on ambient air quality is anticipated. (Section 5.1 and Appendix B).

3.11. Cultural Resources. The Tennessee River Valley was first inhabited by Native Americans. The Hiwassee River valley is rich with many historical sites. Meigs County, bordering McMinn and Bradley Counties along the Hiwassee River, contained many prehistoric and Cherokee sites. A large Mississippian Period town dating back to the 11th century AD existed on Hiwassee Island which is located at the confluence of the Hiwassee and Tennessee Rivers. In the Hiwassee Purchase of 1817, the Cherokees ceded land to the state of Tennessee north of the Hiwassee River. McMinn County was created in 1819 and the city of Calhoun, founded in 1820, was the first town and county seat. The Cherokee Indian Agency was located across the Hiwassee River from Calhoun. In 1838, Cherokees were rounded up and encamped at the Cherokee Indian Agency. From there they were sent on a forced march west which became known as the Trail of Tears.

3.12 Environmental Justice. Executive Order 12898 requires that extensive outreach and opportunity for involvement will address concerns of all communities and that minority residents and low-income residents are not disproportionately affected by potential adverse health and environmental effects from proposed actions. The proposed project areas are open water sites in the Tennessee River, and impacts to the economy and other factors are regional in nature. Demographic information indicates no differential impact based on cultural factors.

3.13 Socioeconomics. Important socioeconomic considerations are presented in Table 4. In summary, the populations of Bradley and McMinn Counties account for approximately 1.5 and 0.9% of the total state population respectively. The populations of Charleston and Calhoun make up less than 1% of their respective county populations. Median and per capita income are generally similar for the state, counties, and cities. The people living in poverty in the counties hover just below (Bradley) or just above (McMinn) people living in poverty in the state (13.5%). Bradley and McMinn Counties and the city of Calhoun contain fewer minorities than the state average of 21.9%. Minorities represent over a quarter of the citizens in the city of Charleston.

Less than 1% of the income generated in Bradley and McMinn Counties come from farm related activities. Roughly a third of the income generated in these two counties comes from industry related businesses and their ability to transport goods (Table 4). This traffic provides many benefits to the region including added jobs.

Table 4. Economic Considerations Attributed to Navigation.

Parameter	Bradley County[1]	City of Charleston[2]	McMinn County[1]	City of Calhoun[2]	Tennessee[1]
2005 (2000) Population	92,092	(630)	51,327 (~0.9 %)	(496)	5,962,959
Median Income (2003)	$ 36,952	$ 33,750	$ 33,805	$ 38,438	$ 37,925
Per capita income (1999)	$ 18,108	$ 18, 586	$ 16,725	$ 19,984	$ 19,393
Minorities (includes Hispanic) (2004)	9 %	29.4 %	8.3 %	5.7 %	21.9 %
Percent below poverty (2003)	12.5 %	8.6 %	13.8 %	10.2 %	13.5 %
Farming/Fishing/Forestry[3]	0.6 %		0.7 %		
Production/Transportation /Material Moving[3]	26.2 %		33.1%		
Manufacturers shipments (approximate value) (2002)	3.6 Billion		$ 1.5 Billion		209 Billion

[1] U.S. Census Bureau
[2] Wikipedia
[3] University of Tennessee

Table 5 shows the tonnage and value of commodities transported by barge. Close to half a million tons of commodities valued at almost 40 million dollars, are transported on the Hiwassee River annually. Shippers Savings on the Hiwassee River exceeded 2 million dollars (Chris Dager, TVA). Shipper Savings are costs the shipper avoids by using the inland waterway navigation system over transport by rail or truck (TVA, 2004). .

Table 5. 2004 Hiwassee Tonnage by Commodity (Chris Dager, TVA)

Commodity		Common Name	Number of Barges	Tons	Value (Dollars)
Number	Name				
27830	Sodium Chloride, Pure And Common Salt (Includes Sea Water)	Salt	252	392,027	20,385,404
27830	Aluminum Ores and Concentrates (Including Alumina)	Alum	2	2,915	1,311,750
52224	Chlorine	Chlorine	28	30,800	9,856,000
52263	Sodium Hydroxide Aqueous Solution (Soda Lye, Liquid Soda)	Caustic Soda	15	20,200	6,464,000
52266	Aluminum Hydroxide	Alum	2	3,043	1,369,350
	TOTALS:		299	448,985	39,386,504
	Shipper Savings:				2,132,679

3.14. Noise. Noise is defined, as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Response to noise varies depending on noise source, distance, personal sensitivity, and time of day. Sound is measured with instruments that record instantaneous sound levels in decibels (dB). The project footprint is encircled by major interstates, roads, towns. The maintenance dredging and disposal sites are located in a rural area. Noise consists of local commercial and recreational river traffic, road traffic, hunting and fishing activities, and wildlife.

3.15. Recreation. The Hiwassee River and it's tributaries between HRM 10-18 provide recreational boating that is valued as a significant local and regional benefit (TDEC, 1998). B & B Marina and Campground is located within the project river reach at HRM 12.9. The marina can accommodate 85 berths (USACE, 2003). The marina provides excursions to the Hiwassee wildlife Refuge for bird watching. Private docks are also located along the river bank.

3.16. Floodplain Management. Executive Order 11988, Floodplain Management, requires federal agencies to evaluate and minimize impact on floodplains. Maintenance dredging and disposal in the Hiwassee River would inherently occur within the floodplain.

3.17. Navigation Safety. According to the McMinn County Economic Development Authority (MCEDA), the Hiwassee River provides a year-round navigable waterway (9-ft minimum draft) up to Calhoun, Tennessee (MCEDA, 2006). There are four commercial river terminals along the project river reach. These four are Olin Corporation (HRM 16.9), Smoky Mountain Transfer Corp. (HRM 17.2), Bowater Incorporated (HRM 18.1), and Southern Ionics, Inc. (HRM 18.9). The B & B Marina and Campground is located at HRM 12.9.

4. ENVIRONMENTAL IMPACTS.

4.1. General. Public Law 91-611, Sec. 122, directs the Secretary of the Army, acting through the Chief of Engineers, after consultation with appropriate Federal and State officials, to consider a number of factors when preparing Environmental Impact Statements or Environmental Assessments. These factors include, air, noise, and water pollution, destruction or disruption of man-made and natural resources, esthetic values, community cohesion and the availability of public facilities and services, adverse employment effects and tax and property value losses, injurious displacement of people, businesses, and farms, and disruption of desirable community and regional growth. Other items such as environmental justice, wetlands, and cumulative effects are included in the Council on Environmental Quality regulations, Engineering Regulations, Executive Orders, later Acts and Laws. Many of these factors have been summarized in tables (Section 2.9) and have been considered to some degree during an evaluation of the alternatives. Alternative 1 – No Action; and Alternative 2 – Open Channel Maintenance Dredging and In-Water Disposal were identified as practicable alternatives. The following sections consider the impact, if any, of implementing either of the two identified practicable alternatives.

4.2. Threatened or Endangered Species. According to the USFWS, no Threatened or endangered species or their habitat would be affected by either of the alternatives. Both alternatives, therefore, support a No Effect determination (Section 1.4; Appendix A). Transplanted populations of the federally threatened Snail darter (*Percina tanasi*) were established by TVA in the late 1970's upstream of the project footprint near HRM 37. Snail darters require a clean swept substrate of sand and fine gravel. The sediment found in the proposed dredge and disposal sites (HRM 10-18) consist of fine sand, silt, and clay, which is not considered suitable darter substrate (FWIE, 1996). During sediment sampling at 11 sites, only one *Corbicula* was collected from the substrate. Lack of appropriate substrate and food (river snails) indicates that the proposed dredging and disposal sites are not likely to contain Snail darters.

4.3. Overall Forest and Vegetative Conditions. The project dredge and disposal footprints are located in the open water of the navigation channel in the Hiwassee River, and open-water channel in

the back chute of Ledford Island respectively where no rooted vegetation was encountered. Neither alternative would affect the existing forest or vegetative condition in the proposed project dredge or disposal footprints.

4.4. Overall Wildlife Habitat Conditions. The project dredging and disposal areas will occur in open waters in the main channel and back chute channel of Ledford Island. No terrestrial wildlife habitat is expected to be present in open water. Waterfowl are expected to be in the area. A Heron Rookery was reported on the Hiwassee River, however it is almost a mile downstream from the dredge and disposal footprints therefore disturbance is expected to be minimal. Sandhill cranes use the Hiwassee River Refuge downstream, however due to distance (HRM 7) and the minimal effects on water quality, this activity is not likely to adversely affect the habitat conditions that attract the cranes to this location. Under Alternative 1, no wildlife or waterfowl would be disturbed. Under Alternative 2, terrestrial wildlife and waterfowl may move up or down river to avoid active maintenance dredging or disposal activities. Disturbance to wildlife would be temporarily and localized with little overall affect on populations scattered along the Hiwassee River. On project completion, wildlife and waterfowl populations are expected to return to pre-project conditions.

4.5. Wetlands. The proposed dredge sites are located in the open water of the navigation channel. The proposed disposal site is located in open water in the back chute of Ledford Island. Disposed material would be placed in water in excess of 9 feet deep in the back chute where no wetlands exist in mid-channel. Disposal in open water away from any emergent vegetation would result in little disturbance to riverine or aquatic bed wetlands. Both alternatives would have virtually no effect on these wetlands.

4.6. Fish and Aquatic Life. Alternative 1 would have no effect. Under Alternative 2, fish may temporarily avoid areas of active dredging and disposal. Benthic organisms would be killed, injured or displaced at the dredge site and any organisms present at the disposal site would be covered. However, except for one Asiatic clam, no other benthic organisms were observed in the sediments collected during the sediment survey from either the proposed dredge or disposal footprints. Given the scarcity of benthic organisms and the lack of typical fish spawning substrate (clean swept sand and small gravel) in the project footprints, negative impact to fish and aquatic life would be considered temporary, localized, and negligible.

4.7. Water Quality. Alternative 1 would have no effect. Alternative 2 would unavoidably disturb and release sediment during dredging and disposal operations; however, this would not be expected to exceed 50 NTUs above background. Although Alternative 2 would locally and temporarily diminish water quality, long-term impacts are not likely.

4.8 Contaminated Sediment. To address potential contaminant concerns, TVA collected eleven sediment samples on September 9, 2005, between HRM 10-18, including within the proposed dredge and disposal footprints. Sediment samples were analyzed for Percent Moisture, Metals (Total), Mercury (Total), Pesticides, Polycyclic Aromatic Hydrocarbons (PAHs), Dioxins and Furans, Polychlorinated Biphenyls (PCBs) , Total Organic Carbon (TOC), and Particle Size. The results of the survey are found in a document produced by the Corps and TVA titled: Sediment Survey Report – Sediment Study, Hiwassee River Segment Miles 10 – 18, McMinn and Bradley Counties, Tennessee, September 9, 2005.

Historical sediment data on the Hiwassee and Tennessee Rivers has been collected by TVA for more than a decade. This data reveals that background concentrations of Arsenic, chromium, copper, lead, nickel, and zinc were higher within the Tennessee watershed than concentrations found in the proposed dredge and disposal footprints. Cadmium was generally twice as high in the project footprints than in the Tennessee watershed background, but still below any probable effect concentration (PEC) that would result in potential toxic effects to the biota (Sediment Survey, 2005) Except for cadmium, the overall metal concentrations in the study area tend to be lower than background levels within the Tennessee watershed. Cadmium occurs naturally in zinc, lead, copper and other ores. According to the Tennessee Division of Geology website, Tennessee is currently the second largest producer of zinc in the nation.

A summary of the non-metal constituents showed that at all locations, PAHs were below TEC. At all locations, pesticides were undetected below the sample reporting limit (RL) and below all reported TEC concentrations. Nearly all of the Dioxin and Furan results were below the RL with most results reported as undetected (U) or estimated (J) but still less than the RL. A very few results were estimated at the highest concentration (Q) however even these results were influenced by ion suppression (S) and method blank contamination. Thirty-two PCB congeners were analyzed. Six congeners were at or slightly higher than the RL of 1 ng/g, but all others were below the RL. Comparison of all the contaminant values reported indicated concentrations in the sediments that would not be problematic to the aquatic community.

4.9. Hazardous, Toxic, and Radiological Wastes. No HTRW concerns were identified within the project river reach, therefore, Alternative 1 and 2 would have no affect on HTRW.

4.10. Air Quality. Currently the project area is considered in attainment with regard to the National Ambient Air Quality Standard (NAAQS) based on minimal impact to air quality (Section 1.4 and Appendix B). There would be no effect to air quality under Alternative 1 (No Action). Dredging equipment would be properly maintained to minimize impact from internal combustion engines. Alternative 2 would have little effect on local air quality. Once work is complete, local air quality would be expected to return to ambient conditions

4.11. Cultural Resources. The Hiwassee River floodplain and islands contain many archeological and cultural sites. The proposed dredge sites consist of recently deposited sediment and is not likely to contain artifacts. The disposal site is located in mid-channel in the back chute of Ledford Island away from the banks. Dredging and disposing river sediment within the navigation channel of the river ensures little risk of disturbing any known or unknown cultural sites that may exist adjacent the Hiwassee River and on its floodplain. Alternative 1 would have no affect on cultural resources. According to the SHPO, Alternative 2 has little chance of affecting cultural resources.

4.12. Environmental Justice. No demographic differences based on cultural, racial, or economic factors were identified. Neither Alternative 1 nor 2 would have a disproportionate effect on minority residents or low-income populations. Either alternative would equally affect all residents of any ethnicity or background.

4.13. Socioeconomics. The No Action alternative (1) would result in the gradual formation of shoals that would curtail commercial traffic in this reach of the river. This result would have far-reaching, negative economic impacts. The maintenance dredging alternative (2) would maintain the status quo and would maintain positive contributions to the regional and national economies.

4.14. Noise. There would be no additional noise under Alternative 1. Under alternative 2, noise from maintenance dredging activities would be minor, short-termed, and negligible as compared to normal background human and wildlife noise on the Hiwassee River and floodplain.

4.15. Recreation. The No Action alternative (1) would gradually result in additional channel filling and with the development of potentially hazardous shoals. Boat passage would be particularly problematic during periods of low water, restricting recreation. The maintenance dredging alternative (2) would remove major shoals to minimize affect on recreation and thereby maintain the status quo.

4.16. Floodplain Management. The No Action alternative (1) would have no effect on floodplain management. Maintenance dredging and disposal (Alternative 2) in the Hiwassee River would inherently occur within the floodplain. Alternative 2 is not likely to increase the risk of a "base flood" nor impact the floodplain. Maintenance dredging and disposal is necessary to ensure an open navigation channel and therefore, there is no practical alternative to working in the Hiwassee River.

4.17. Navigation and Safety. Commercial terminals require safe navigation to barge their products. Shippers savings are realized when navigation channels are maintained at consistent depths (TVA, 2004). Under Alternative 1 (No Action) the navigation channel would continue to fill in and become shallower. Over time the potential for groundings would increase. Lack of channel maintenance could eventually close navigation. As a result one of the designated uses –navigation – would be impaired. Alternative 2 (maintenance dredging and disposal) would provide and open and safe channel for the existing waterborne traffic.

4.18. Cumulative Effects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the (proposed) action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR 1508.7)". Council for Environmental Quality (CEQ) guidance identifies an 11-step process for evaluating cumulative effects.

The assessment can be defined as "what resources is the proposed action going to affect". Effects can result from either direct-project related, indirect-project related, and independent indirect causes. Based on the public and agency scoping and review, the following resources have been identified as target resources: fish and aquatic life and navigation.

The temporal boundary for this assessment is 1940 when Chickamauga Lake was impounded and effectively changed the entire structure and function of the river. The future temporal boundary is approximately 50 years forward in time. The geospatial boundaries cover the Tennessee River basin for both aquatic resources and navigation purposes.

1. **Cumulative Effects – Fish and Aquatic Life.** The Tennessee and Hiwassee Rivers have undergone considerable changes since TVA constructed the locks and dams in the 1940s. The Tennessee River is considered one of the most ecologically diverse rivers in the world. However, since the dams were impounded this diversity has been affected, primarily due to habitat change within the rivers from a lentic to a lotic system. About a dozen fish species adapted for riverine conditions are federally listed as endangered or threatened, and about 65 other species are listed under management categories used by the states. About 30 riverine mussels have been extirpated

from the Tennessee River system, and twenty-eight mussels are under federal protection. Other invertebrates are less well known, but the Tennessee River system also claims two crustaceans and four snails under federal protection (USACE, 2002).

These changes in biodiversity of the riverine species stem largely from the habitat alterations associated with reservoir impoundment. Flow disruptions caused by dams and diversions altered normal river functions by changing water temperature and chemistry, by stopping the flow of nutrients and sediment downstream, by interfering with the upstream and downstream movement of fish and other organisms, and by covering gravel and cobble substrates with fine grained sediments.

The State of Tennessee has listed several designated uses for the Hiwassee River. These uses include fish and aquatic life. Due to the nature of the fine-grained sand and silt sediment, few organisms are now found in the material that would be dredged and disposed in the Hiwassee River. Dredging and disposing at the proposed sites would have little effect on the overall health of the aquatic ecosystem within the Hiwassee and Tennessee River watersheds. Dredging and disposal has occurred in the historical sites in 1994 with little effect. It can be projected that minimally, these historical sites would continue to require dredging every 10-12 years for the foreseeable future. The primary future effect is that the disposal site would become more shallow over time.

During a 2005 sediment survey, only one Asiatic Clam (*Corbicula flumanai*) was collected from the twelve sediment sampling sites. Given the sparseness of the existing benthic community within the proposed dredge and disposal sites, the impact of performing maintenance dredging and disposal would have negligible affect on fish and aquatic life.

2. **Cumulative Effects – Navigation.** One of the designated uses of the Hiwassee River is navigation. Although the river has been used for navigation since prehistoric times, it did not reach its current potential until TVA constructed the series of locks and dams in the 1940s. Safe and reliable transportation of bulk quantities of goods are essential to the local and regional economy.

   The navigation industry has grown since TVA built the current system of locks and dams. In 1999 about 2.3 million tons of commodities moved on the Upper Tennessee navigation system, accounting for about 6.5 percent of the entire Tennessee River System traffic. Commodities traversed an average distance of 1,400 miles and have origins or destinations in 42 congressional districts in 17 states in the South, Midwest, and Mid-Atlantic Regions. There are four commercial river terminals on the Hiwassee River within the project area that rely on a navigable waterway.

   To maintain this vital resource and the economic benefits it generates, a safe and reliable navigation channel must be maintained. Failure to maintain the system would lead to navigation restrictions followed by effective closure of the Hiwassee River navigation channel. This would have negative impacts on the shipping industry, the existing infrastructure, and would prevent the cities of Charleston and Calhoun from accruing future benefits. As long the navigation system is maintained, the existing waterborne traffic would be maintained and continue to contribute to the region's economy.

5. ENVIRONMENTAL COMMITTMENTS

5.1 General Safeguards. Alternative 1 (No Action) would halt maintenance dredging and disposal activities, therefore no environmental commitments would be necessary. Alternative 2, (Maintenance Dredging and Open Water Disposal) would adhere to the following environmental commitments:

- Compliance with all applicable Federal laws and regulations and with all applicable laws, ordinances, and regulations of the state, county, and municipality.
- The project area would be protected against pollution of its air, ground, and water. Equipment will be properly maintained to ensure strict emissions control, and spill prevention during refueling operations.
- Ensure safe passage of commercial and recreational navigation traffic at the dredge and disposal site with approved marking, lights, and horns.
- Avoid or minimize impacts to areas that have not been previously disturbed.
- Avoid forested/scrub-shrub/emergent wetlands and aquatic bed wetlands by disposing in the deepest part of the channel in the back chute of Ledford Island.
- Ensure Best Management Practices (BMPs) for maintenance and operation to minimize turbidity during dredging and disposal activities.
- An effort would be made to work around fish and nesting activities during March 15th to June 15th. Work schedule would also need to consider hindrance to recreation traffic in the spring and summer, followed by hunting in the fall and winter to determine a safe operating window.

6. COORDINATION

6.1 Scoping Letter Comments. On May 24, 2006 a Scoping Letter was sent to known interested parties and agencies for their review of the proposed maintenance dredging and open-water disposal project. The Scoping Letter and mailing list are located in Appendix A. Comments to the Scoping Letter are found in Appendix B. Comments are incorporated in Section 3 and 4 of this EA and summarized below:

1.) TVA responded by letter dated June 15, 2006. TVA acknowledged the Corps' responsibility to assist TVA in its statutory obligation to maintain the Hiwassee River navigation channel and requested to be a cooperating agency. TVA noted that TWRA managed waterfowl food plots on Ledford Island. TVA was stabilizing archaeological sites on Ledford Island adjacent the disposal area. A review of TVA's Natural Heritage Database showed no known occurrences of federally or state listed species in the vicinity of the proposed dredge or disposal areas. Forested/scrub-shrub/emergent wetlands and aquatic bed wetlands do occur in many areas around the edge of Ledford Island, however, sediment disposal in open water on the south side (back chute) of the island away from emergent vegetation would result in temporary and negligible impact to the aquatic bed wetlands. ***Corps Response****: The Corps acknowledges TVA as a cooperating agency, concurs with their wetlands assessment, and has incorporated their information into this EA.*

2.) The U.S. Fish and Wildlife (USFWS) responded by letter on July 10, 2006. The agency noted that their records indicated that no significant adverse impacts to federally listed endangered or threatened species in the impact area of the proposed action were anticipated. However, the agency noted that forested wetlands existed on Ledford Island and recommended an evaluation as to how these wetlands may be impacted by dredging activities. ***Corps Response****: The proposed dredge sites are located in the navigable channel in open water exceeding 6 feet in depth. The*

disposal site in the back chute of Ledford Island is located in the middle of the channel in open-water exceeding 6 feet in depth. No forested wetlands exist in open water, therefore work in the proposed dredge and disposal areas would not affect the hydrology of these wetlands.

3.) The U.S. Environmental Protection Agency (EPA) responded by letter on June 26, 2006 with comments focused on water quality and aquatic community concerns and a request for additional detail about maintenance dredging and disposal operations, background sediment and water quality, and the presence of sensitive animal and plant communities within the project area. The project is located in the Hiwassee River watershed which is designated as and EPA Region 4 Priority Watershed. ***Corps Response:*** *The Corps is aware of these concerns and has addressed them in this EA. The Corps and TVA performed a sediment survey on September 8, 2005 to evaluate sediment quality in the proposed dredge and disposal areas. The Corps and TVA have coordinated with EPA regarding the sediment survey design, analyses, and results to address contaminant concerns. The Corps and TVA will coordinate with all agencies and interested parties in the project area within the Hiwassee River watershed.*

4.) The Tennessee Wildlife Resources Agency (TWRA) responded by letter dated July 31, 2006 and recommended that dredged material be disposed upland and seeded. However, the agency recommended no disposal on Ledford Island because it was managed for waterfowl and disposal on the island could impact wildlife food plots. Ledford Island provided important fish and wildlife recreation and requested no dredging activities between March 15th to June 15th to avoid fish spawning and nesting activities. ***Corps Response****: The Corps proposes to dispose in open water behind, and not on, Ledford Island. Dredging and disposal activities could disturb wildlife and fish. A sediment survey revealed that the river bottom consisted of very fine and soft silt, clay and sand, which is not considered suitable for fish spawning and nesting habitat since fine silt would likely smother fish eggs. The Corps will make every effort to accommodate the above time window , however, considering the sediment composition and the small size of the disposal and dredge areas in comparison to the rest of the Hiwassee River, impact to fish spawning and nesting at the proposed sites would be negligible. Work schedule would also need to take into account hindrance to recreation traffic in the spring and summer, followed by hunting in the fall and winter to determine a safe operating window. On completion of the work, wildlife and fish movement would be expected to return to the existing condition.*

5.) The Tennessee Division of Natural Areas (TDNA) (formerly Natural Heritage) responded by email on May 31, 2006, and noted that on review of the project and maps, they did not find any occurrences of rare, threatened or endangered species from the immediate project area. However, there was a record of a heron rookery near HRM 10.7 and requested that an effort be made to avoid adverse impact to the rookery. ***Corps Response****: The heron rookery is almost 1 mile downstream of the project area limits, and the Corps will make every effort to avoid impacting it.*

6.) The Tennessee State Historic Preservation Office (SHPO) responded by letter on May 31, 2006 requesting additional information from the agency's cultural resources staff. The Corps Archeologist responded on Jun 15, 2006 and provided sediment survey maps. The information showed that the location of recently accumulated sediment in the river, and the proposed disposal area in the deepest part of the back chute of Ledford Island. The Corps finding was that no historic properties occur within the project's "area of potential effects" that will be affected and requested concurrence with this finding. By way of letter dated June 29, 2006, the SHPO concurred with this finding. ***Corps Response****: The Corps will continue to coordinate with the SHPO as appropriate.*

7.) The Tennessee Division of Water Pollution Control (TDWPC) responded by letter on June 22, 2006 and noted that the project will require a State permit. The Division was concerned about possible contaminated sediment within the project river reach (HRM 10-18) and requested chemical analysis of the sediment. The Division also requested a description of dredging and disposal operations. ***Corps Response:*** *The Corps has applied for Water Quality Certification from the State of Tennessee. The Corps and TVA performed a sediment survey to address contaminant concerns. The survey report is available and results have been incorporated by reference in this EA. A description of maintenance dredging and disposal operations is included in this EA in Section 2.2.3.*

8.) The Tennessee Division of Air Pollution Control (TDAPC) responded by letter on June 9, 2006 stating that impact to air quality should be minimal and that properly maintained equipment should minimize emissions from internal combustion engines. ***Corps Response****: The Corps concurs with this assessment.*

9.) The Tennessee Division of Underground Storage Tanks (TDUST) responded by letter on May 30, 2006. The Division was not presently aware of any circumstances relative to the UST Program which might adversely affect the proposed maintenance dredging and disposal activities. ***Corps Response****: The Corps concurs with this assessment.*

10.) The Tennessee Division of Geology (TDG) responded by letter on June 5, 2006, and determined that the general area consists of Cambrian and Ordovician limestones and shales, and that the specific project sites consists of Quaternary alluvial deposits and is not expected to pose any adverse environmental concerns or problems. No potential mineral deposits occur in the project area. ***Corps Response****: The Corps concurs with this assessment.*

11.) The Tennessee Division of Recreation Educational Services (TDRES) responded by letter dated June 21, 2006. The Division requested that local, state and federal recreational agencies and any interested individuals have an opportunity to review and comment on the EA and the potential impact maintenance dredging and disposal operations could have on the recreational utility or conservation value on that segment of the Hiwassee River. The Division found no occasion where a grant administered by the Division would be impacted by the proposed work. ***Corps Response:*** *The Corps endorses this request and has included a Notice of Availability of the EA, unsigned Finding Of No Significant Impact (FONSI) and the 2005 sediment survey report in the Public Notice to allow all interested parties a chance to review and comment on the documents.*

12.) The Tennessee Department of Conservation and Environment, Environmental Policy Office TDEPO) responded by letter on June 2, 2006 and noted that they would review and comment on this project. ***Corps Response:*** *The Corps encourages input on this project.*

13.) The Tennessee Department of Economic and Community Development, Division of Business Development (TDBD), responded by letter on June 6, 2006. The Division requested coordination with the Cleveland/Bradley County Chamber of Commerce because of an interest to located water and sewer infrastructure within the project area. ***Corps Response:*** *The Corps will coordinate with this agency and all interested parties.*

14.) Smoky Mountain Transfer Corporation responded by letter on June 20, 2006 and noted that their company operated a barge unloading facility within the project river reach between HRM 10-18. The company noted its importance and interactions with three other companies within the project area that contribute to the economy of Charleston, Tennessee. The company noted its concern for maintaining a navigable water way for its operation and for the companies it serves. ***Corps***

Response: *The Corps and TVA recognize the importance of a navigable waterway to maintain the economic wellbeing of the local and regional economy.*

15.) Olin responded by letter on June 23, 2006 noting that reliable river navigation was critical to the operation of their facility. The company has experienced barge groundings during periods of low water. River navigation prevents the need to use 400 trucks per week to transport product across the nation. ***Corps Response:*** *The Corps and TVA recognize the importance of a navigable waterway to companies located on the Hiwassee River.*

16.) The Office of the County Mayor responded by letter on June 19, 2006 and noted that McMinn County owned property along the Hiwassee River that included Camp Cherokee. However, their office anticipates that the proposed project would have only minimal impact on recreation and navigation in McMinn County. ***Corps Response:*** *The Corps concurs with this assessment.*

6.2 Public Notice Comments. On Month ___, 2007, public notice number ___ was circulated to the public for a 30 day review. Notification was sent to addressees on the mailing list (Appendix A). Comments received during this review period were considered and summarized in this section, and the correspondence became part of this EA (Appendix D). If there were no significant concerns, the FONSI would be signed on completion of this NEPA process.

7. CONCLUSIONS AND RECOMMENDATION.

The No Action alternative would slowly lead to the closure of the Hiwassee River to navigation and would have a negative impact on the region's economy. Immediate impacts would affect the existing infrastructure as docks, watercraft, warehouses, and all associated equipment were abandoned. Long-term impacts would see a decrease in the potential economics of the region. Goods, which could be shipped in bulk, would become more expensive since an alternative mode of transportation such as trains or trucks would have to be used. Navigation is a designated use of the Hiwassee River within the project area. Failure to maintain a safe and reliable navigation channel could be cause for future listing of the river under the Clean Water Act's Section 303(d) due to impairment of navigation. No action, then, would result in a change with negative impacts.

Open channel maintenance dredging and disposal, on the other hand, would maintain the status quo. Shipping would continue as it does under current conditions and would continue to support and grow the region's economy. While the historical aquatic community has regrettably changed over the last 65 years, the existing community is sparse. The negative impact of dredging and disposal in-river would have a negligible impact on the existing benthic community that would be expected to recover in a short period of time. In light of the existing conditions of the aquatic and navigation communities, Alternative 2, Open Channel Maintenance Dredging and Disposal is the environmentally preferred action.

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Appendix A
Scoping Letter
and
Mailing List

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1070
NASHVILLE, TENNESSEE 37202-1070

REPLY TO

May 24, 2006

Project Planning Branch

TO ALL INTERESTED PARTIES:

The U.S. Army Corps of Engineers is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the impacts of proposed maintenance dredging and disposal activities at sites described below. The EA will provide the basis for a decision whether to proceed with preparation of an Environmental Impact Statement (EIS), a Finding of No Significant Impact (FONSI), or No Action.

The Rivers and Harbors Act of 24 July 1946 (Public Law 525, 79th Congress, 2nd Session) authorized the Corps of Engineers to improve and maintain a navigable channel on the Hiwassee River. The EA would evaluate the proposed maintenance dredging that is limited to within the navigation channel between Hiwassee River Miles 10 and 18 near Charleston, Tennessee, in McMinn and Bradley Counties. Open water disposal in the back chute of Ledford Island is being considered. The attached map (Figure 1) shows the general location of the proposed dredging sites and the proposed open water disposal site.

This letter serves to request comments from the public; federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity and the environmental issues that should be addressed in the Environmental Assessment. We are also requesting information about resources in the immediate project area and of plans or proposals for any other development that may also influence those resources. Any comments received during the comment period will be considered in the NEPA process. Comments are used to assess impacts on fish, wildlife, endangered species, water quality, historic properties, water supply, conservation, economics, aesthetics, wetlands, flood hazards, floodplain values, land use, navigation, sedimentation, recreation, energy needs, safety,

food and fiber production, mineral needs, considerations of property ownership, general environmental effects, cumulative effects, and in general, the needs and welfare of the people.

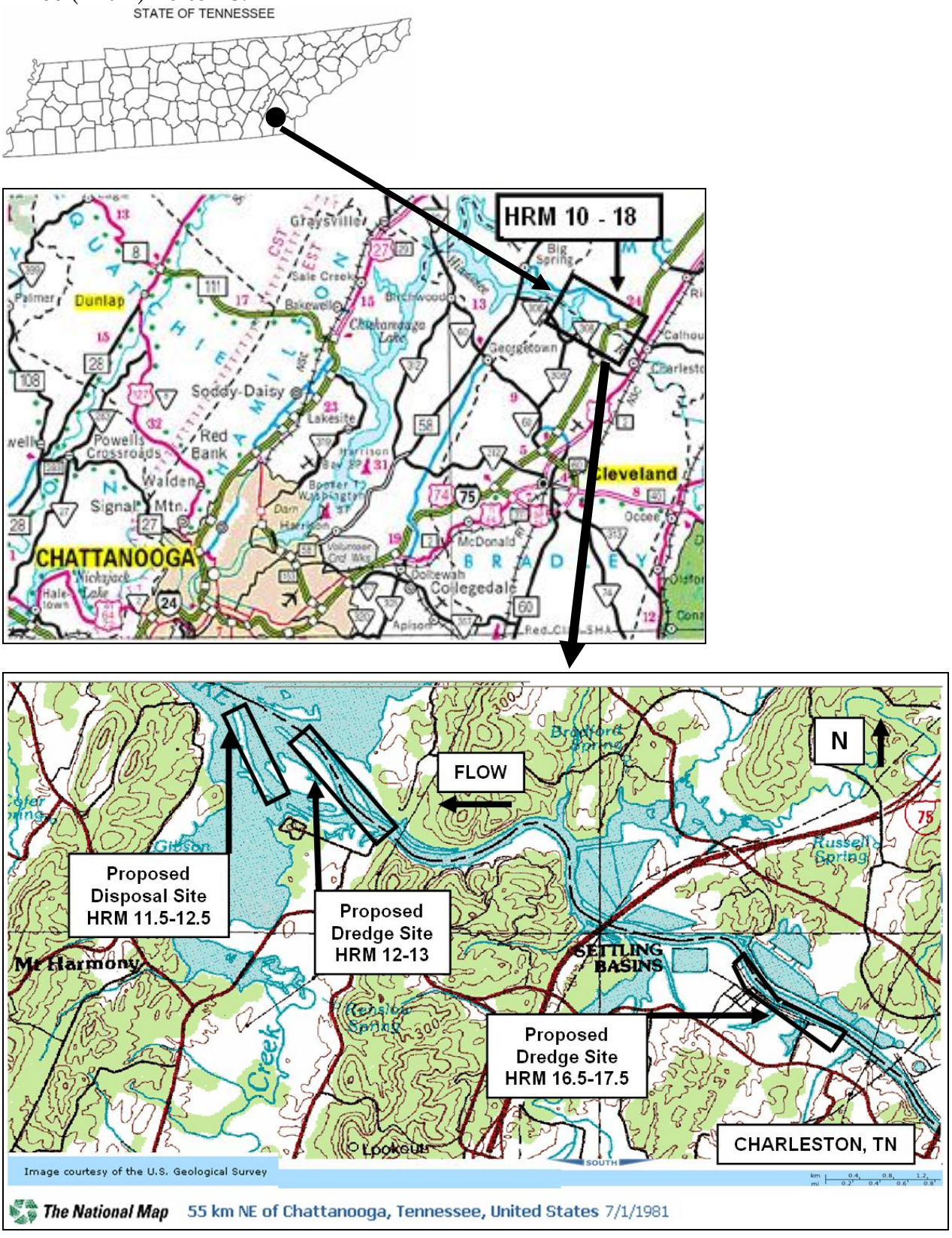
This letter also serves to initiate the public involvement requirements of Section 106 of the National Historic Preservation Act of 1966, as amended. Section 106, implemented by regulations in 36 CFR 800, requires the Corps of Engineers to consider the effects of its undertakings on historic properties.

Please submit written comments concerning environmental issues **no later than June 24, 2006**, to ensure evaluation and inclusion in the Environmental Assessment. Please send your comments to the Nashville District, U.S. Army Corps of Engineers, P.O. Box 1070, Nashville, TN 37202-1070, Attn: CELRN-PM-P (Joy Broach). If you have questions, please contact Ms. Joy Broach at 615-736-7956. Your participation is appreciated.

Sincerely,

Douglas L. Radley, A.I.C.P.
Chief, Project Planning Branch

Figure 1. Location Maps. State Map (top), Vicinity Map (middle) and Site Map (bottom) showing proposed dredge and disposal sites located between Hiwassee River Miles (HRM) 10 to 18.



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Appendix B
Scoping Letter Reponses

Appendix C
Section 404(b)(1) Evaluation

PRELIMINARY
SECTION 404(b)(1) EVALUATION
CHANNEL MAINTENANCE DREDGING AND OPEN WATER DISPOSAL
BETWEEN HIWASSEE RIVER MILES 10 - 18
MCMINN AND BRADLEY COUNTIES, TENNESSEE

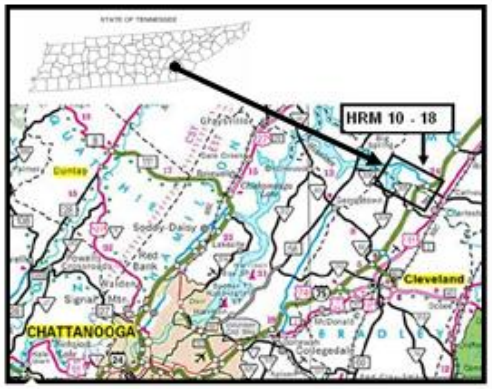
I. PROJECT DESCRIPTION.

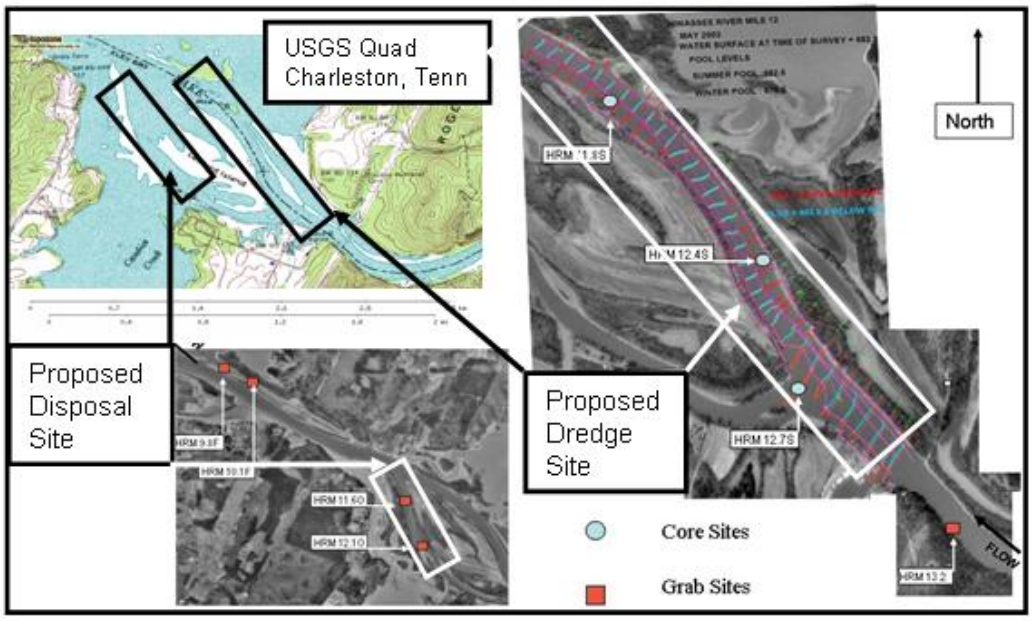
a. Location. The project sites are in the backwaters of Chickamauga Lake on the Hiwassee River near the towns of Charleston, Bradley County, and Calhoun, McMinn County, in Tennessee. The proposed dredge and disposal areas are located between Hiwassee River Miles (HRM) 10 (35^o, 21', 14"N; 84^o, 52, 00"W) and HRM 18 (35^o 17' 53"N; 84^o, 45', 45"W) on the Charleston, Tenn. and Calhoun, Tenn. U.S. Geological Survey 7.5 minute quadrangle maps respectively. Refer to Figure 1 for project location.

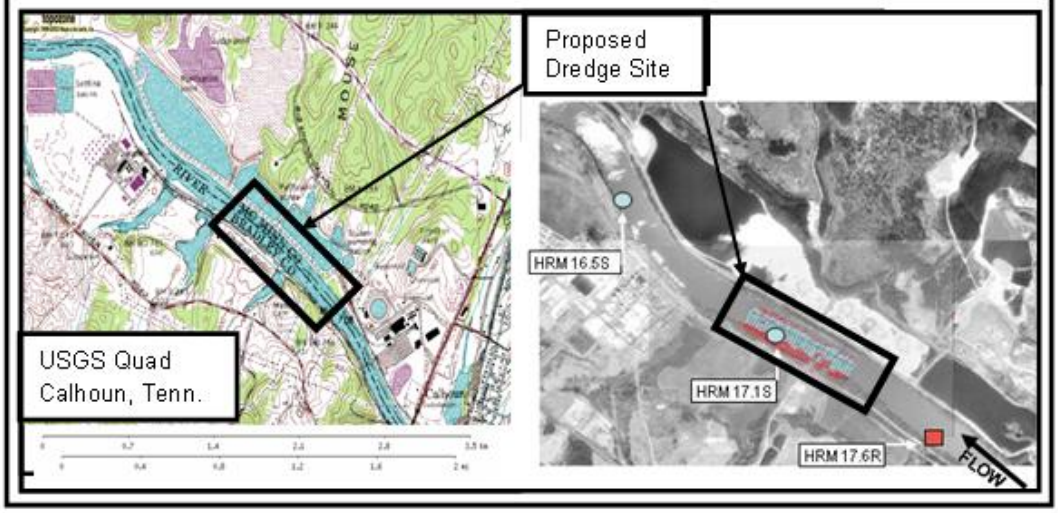
b. General Description. The proposed work consists of dredging river bottom material using a barge mounted crane with a clam shell bucket and placing the sediment into a split hull barge. The barge would dispose the sediment in open water in the historical disposal area in the back chute of Ledford Island. A sediment survey was performed on September 8, 2005, to determine sediment quality. Sediment results were documented in a report titled: Sediment Survey Report - Sediment Study, Hiwassee River Segment Miles 10 – 18, McMinn and Bradley Counties, Tennessee, which is incorporated by reference.

c. Authority and Purpose. The Rivers and Harbors Act of July 3, 1930, ch. 847, 46 Stat. L. 927 (1930) authorized the permanent improvement of the Tennessee River to a navigable draft depth of nine feet at low water from the mouth to Knoxville, Tennessee. The Tennessee Valley Authority Act of 1933 (16 U.S.C. §§ 831-831ee) authorized TVA to provide a nine-foot draft channel in the Tennessee River from Knoxville to its mouth. Since passage of the Tennessee Valley Authority Act of 1933, the Corps of Engineers, in cooperation with TVA, has maintained navigation channels on TVA projects by performing necessary maintenance dredging operations. This division of responsibility is outlined in a Memorandum of Agreement between the Corps and TVA dated October 26, 1962. TVA is a cooperating agency for the NEPA process.

Figure 1.
Vicinity and Location Map.
Proposed Dredge and Disposal Sites on the Hiwassee River. Maps show the dredging survey (hatched marks within the river) and location of sediment core and grab sampling sites collected on September 9, 2005.







d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. Substrate in this river reach is predominantly very fine sand, silt and clay interspersed with plant detritus.

(2) Quantity of Material. The proposed work consists of dredging approximately 36,000 cubic yards of lake bottom material between HRM 11.5 – 13.0 and 16.5 – 17.5.

(3) Source of Material. All dredged and fill material would come from the designated navigation channel.

e. Description of the Proposed Discharge Site.

(1) Location. The proposed discharge site is a historical disposal area located in the back chute of Ledford Island (HRM 11.6-12.1) on the Hiwassee River (Figure 1).

(2) Size of Site. The proposed discharge site in the back chute of Ledford Island is approximately 75' wide and up to one half mile long.

(3) Type of Site. All excavated material would be placed in open water in mid channel in the back chute of Ledford Island.

(4) Type of Habitat. The benthos at the dredging and disposal sites consist of few organisms generally adapted to life in soft, shifting, fine-grained substrates. During a sediment survey consisting of eleven sites, one Asiatic clam, (*Corbicula fluminea*) was retrieved. The clams are filter feeders catching suspended organic material for food. The possibility of encountering endangered shellfish such as mussels or snails is extremely remote due to the nature of the substrate.

(5) Timing and Duration of Discharge. All efforts would be made to dredge and excavate during a time window to minimize impact on Snail Darter Spawning (December – April) and waterfowl hunting (October – February) around Ledford Island and the Wildlife Management Areas nearby.

f. Description of Disposal Method. A clamshell dredge would place sediment into a split hull barge. The bottom of the barge would open underwater to dispose the sediment.

II. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations. The Corps provided a hydrographic survey map to TVA personnel showing the shoaling areas at the proposed dredge sites in the study area (Figure 1, hatched lines). Eleven sediment samples were collected between HRM 10-18, including within the proposed dredge and disposal footprints, by TVA on September 9, 2005. Within the study area, sediment composition ranged from predominantly silt with some sand, clay, and detritus in the downstream sites to predominantly very fine sand with some silt, clay, and little detritus in the upstream sites.

(1) Substrate Elevation and Slope. The navigation channel would be excavated to a channel grade elevation in feet mean sea level (EL) of 663, between HRM 0.0-16.0, and 664 between HRM 16.0-20.4 which is 11 feet below Chickamauga's winter minimum pool of EL 675.0. This provides the required minimum draft depth of nine feet and an additional two feet of overdepth for safety and efficiency. Slope is maintained by dredging only to the required elevation.

(2) Sediment Type. Substrate in this river reach is predominantly fine silt, clay, and some very fine sand interspersed with plant detritus.

(3) Dredged/Fill Material Movement. Excavated material would be placed in the back chute of Ledford Island. This area is protected from the main channel flow of the Hiwassee River and is therefore unlikely to move downstream.

(4) Physical Effects on Benthos. During sediment sampling one Asiatic clam was collected. The soft fine grained sediment, characteristic of the area, does not provide adequate substrate for benthic organisms. The proposed dredge and disposal activities would have little effect on the benthos since so few organisms exist in the sediment at these sites.

(5) Other Effects. The historical dredge site has been repeatedly dredged, beginning in 1974, and again in 1980, and 1993-4, and repeatedly disposed in the back chute of Ledford Island. No significant effects have been noted from these past operations. There would be no loss of floodwater storage capacity.

(6) Actions Taken to Minimize Impacts. Proposed maintenance dredging activities would be scheduled as best practicable, to minimize impacts to potential Snail darter spawning (December – April) and waterfowl hunting (October – February).

b. Water Circulation, Fluctuation, and Salinity Determinations. Current patterns, river flow and velocity and hydrologic regime would not be affected. There would be no fluctuation of pool level since fluctuations are regulated by water inflows from upstream and releases from the downstream lock and dam. No significant project-induced effects would occur during high water periods. Salinity is not a consideration in this freshwater system.

(1) Water. Chickamauga Lake maintains a regulated freshwater pool to maintain adequate navigation depths on the Hiwassee River. The Tennessee Department of Environment and Conservation's Division of Water Pollution Control describes the water quality in the Hiwassee river in the 2006 305(b) Report, The Status of Water Quality in Tennessee. HRM 0-13 supports all its designated uses, but HRM 13-18 is listed as impaired for recreation due to pathogens.

(2) Current Patterns and Circulation. No significant change to the current patterns and circulation of water is anticipated.

(3) Normal Water Fluctuations. Because Chickamauga Lake is regulated to maintain adequate navigation depths, there is little fluctuation except during flood events. Dredging activities are not expected to produce any significant changes to the normal water fluctuations.

(4) Salinity Gradients. Not applicable. This is a freshwater system.

(5) Actions That Will Be Taken to Minimize Impacts. No impacts to circulation or fluctuation are anticipated, therefore, no action is necessary.

c. Suspended Particulate/Turbidity Determinations. Turbidity levels would be elevated locally during dredging and disposal activities. On completion of the proposed work, turbidity levels should return to normal background levels. Given the small work footprints, the effect on the chemical and physical properties of the Hiwassee River would be imperceptible.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site. Some *de minimus* discharge is unavoidable during disposal operations. Use of a clamshell dredge and split hull barge would minimize a sediment slurrying effect and thereby minimize turbidity. Any effects at the disposal site are expected to be localized and short-termed.

(2) Effects on Chemical and Physical Properties of the Water Column. The excavated material is composed of native fine grained sand, silts, and clays. Disposal should have little or no effect on the chemical or physical properties or the water column. Water clarity, odor, and taste may be slightly affected but these would be expected to stabilize to pre-disposal ranges quickly on project completion.

(3) Effects on Biota. One Asiatic clam was collected in the soft, fine-grained substrate in the disposal site. There would be little affect on the biota give the sparseness of the community in the disposal and dredge sites.

(4) Actions Taken to Minimize Impacts. Best Management Practices as prescribed by the State of Tennessee would be followed during all phases of project. Sediment plumes would not be expected to exceed 50 NTUs above background. It is anticipated that the effects of suspended particulates and turbidity would be negligible and are expected to return to pre-dredging levels.

d. Contaminant Determinations. The Tennessee Department of Environment and Conservation's Division of Water Pollution Control describes the waters in the Hiwassee River within the project areas in the 2006 305(b) Report, The Status of Water Quality in Tennessee as not supporting all of the designated uses. This is due to unacceptable levels of *E. coli* approximately between HRM 13 – 18, however, there are no advisories listed for the Hiwassee River (Tennessee 2006 305(b)). Historical fish tissue data (1996) and the presence of a potential source (paper mill) suggested that Dioxin may be a concern. Currently and historically, the Hiwassee River has not been posted for Dioxin.

To address potential contaminant concerns, TVA collected eleven sediment samples on September 9, 2005, between HRM 10-18, including within the proposed dredge and disposal footprints. Sediment samples were analyzed for Percent Moisture, Metals (Total), Mercury (Total), Pesticides, Polycyclic Aromatic Hydrocarbons (PAHs), Dioxins and Furans, Polychlorinated Biphenyls (PCBs) , Total Organic Carbon (TOC), and Particle Size. The results of the survey are found in a document

produced by the Corps and TVA titled: Sediment Survey Report – Sediment Study, Hiwassee River Segment Miles 10 – 18, McMinn and Bradley Counties, Tennessee, September 9, 2005.

Based on historical sediment data and results from the sediment study, decisions were made as outlined in a Tier I evaluation found in the Inland Testing Manual (EPA, 1998). This process involves an examination of existing sediment information to determine (1) whether or not there is "reason to believe" that the material needs to be tested for potential adverse effects, and (2) identification of any contaminants of concern (COC) relative to testing in later tiers. Sediment quality guidelines (SQGs) were used to assist in sediment data interpretation and are found in a 2000 document entitled, "Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems." Sediment contaminant concentrations below the threshold effect concentration (TEC) are considered to indicate little likelihood of the presence of sediment toxicity. A higher level, the probable effect concentration (PEC) is the concentration of a sediment contaminant above which harmful effects on sediment dwelling organisms are suspected. Between the TEC and PEC is what could be referred to as a zone of uncertainty or gray zone regarding potential harmful effects.

Reference sediment sites were identified in the study area. The purpose of a reference site as defined by the Inland Testing Manual (EPA, 1998) is to compare the background of an area that has never been dredged and, thus. cross contaminated (reference site) to historic dredge and disposal sites. Historical background sediment quality is also an important consideration when comparing contaminant concentrations to TEC and PEC because background levels may be normally high.

A summary of the non-metal constituents showed that at all locations, PAHs were below TEC. At all locations, pesticides were undetected below the sample reporting limit (RL) and below all reported TEC concentrations. Nearly all of the Dioxin and Furan results were below the RL with most results reported as undetected (U) or estimated (J) but still less than the RL. A very few results were estimated at the highest concentration (Q) however even these results were influenced by ion suppression (S) and method blank contamination. Thirty-two PCB congeners were analyzed. Six congeners were at or slightly higher than the RL of 1 ng/g, but all others were below the RL.

Historical sediment data on the Hiwassee and Tennessee Rivers has been collected by TVA for more than a decade. This data reveals that background concentration of metals within the Tennessee watershed is normally high. Geologic areas containing metal ores would be expected to have higher metal concentrations in the sediment background than areas that are not mined for metal ores. All arsenic, chromium, and lead values were detected below TEC. All copper values were below TEC, except two samples, which were slightly above TEC. All nickel values were below TEC except for one sample that was slightly above TEC. About half of the mercury values were below the TEC, however all mercury results were well below the PEC. All the zinc values except for one sample, exceeded the TEC, but all samples were below PEC. Overall, cadmium values hovered at or above TEC, but all values were well below the PEC level. Cadmium occurs naturally in zinc, lead, and copper ores. According to the Tennessee Division of Geology website, Tennessee is currently the second largest producer of zinc in the nation. Except for cadmium, the overall metals concentration in the study area tended to be lower than background levels observed in the historical sediment data collected by TVA.

Based on the survey results, TVA historical data, and use of the TEC and PEC as a guide, it is believed that the Hiwassee River sediment, in the proposed dredge and disposal sites, do not

contain contaminants of concern in concentrations that would result in any adverse impacts on biota.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton. The plankton may be temporarily disturbed during dredging and disposal, however, plankton are ubiquitous and would rapidly return to pre-work levels when the project is completed.

(2) Effects on Benthos. During sediment core and grab sample collections, a single Asiatic clam was collected. Soft and very fine grained sediment is not considered optimal substrate for benthic organisms. Since few organisms were encountered in the marginal habitat, the proposed project would have little effect on the benthos.

(3) Effects on Nekton. These actively swimming organisms would flee the area during periods of disturbance, but would quickly return when operations are complete. There would be minimal effect on the nekton.

(4) Effects on Aquatic Food Web. The size of the project footprints that would be disturbed are tiny compared to the whole Hiwassee River. There would be little or no effect on the food web.

(5) Effects on Special Aquatic Sites. There are no special aquatic sites present; therefore, there would be no effect.

(6) Threatened and Endangered Species. There are no known Federally listed threatened or endangered species in the project areas and a No Effect determination can be supported.

(7) Other Wildlife. Wildlife may be disturbed during maintenance activities and seek refuge along other areas of the river; however, they are expected to return on project completion.

(8) Actions to Minimize Impacts. The proposed action would be planned to minimize disturbance to possible Snail darter spawning (December-April) and waterfowl hunting (October – February). All possible BMPs would be enforced to minimize any adverse impacts on the environment. After dredging is complete the area is expected to return to pre-project conditions.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. The mixing zone at the disposal site would be small. A clamshell dredge and split-hull barge would be used for this work because this equipment would suspend the least amount of sediment as described in Appendix C of the 1998 Inland Testing Manual (EPA 823-B-98-004).

(2) Determination of Compliance with Applicable Water Quality Standards. Sound environmental and engineering practices commonly referred to as Best Management Practices (BMPs) would be followed during all phases of project. Some de minimus discharge during dredging is unavoidable. Sediment would unavoidably be disturbed and released during dredging and disposal, however, sediment plumes would be small and highly localized, and would not be expected to exceed 50 NTUs above background. This project would meet applicable water quality standards set by the State of Tennessee.

(3) Potential Effects on Human Use Characteristics. De minimus discharges would be handled and monitored to ensure that objectionable turbidity is not generated by the activity. Any effects would be highly localized and short-term. There would be a small negative effect on recreation, water, fishing, or any other human use characteristic at the dredge and disposal sites, however all effects would cease on work completion.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. No adverse cumulative effects to the aquatic ecosystem of the Hiwassee River has been attributed to the disposal of fill materials associated with dredging at the proposed project site. All material is native sediment from the river bed that has been transported to a different location within the river.

Historically the Hiwassee River was, and still is a river with high aquatic biodiversity as exemplified by the many wildlife management areas around the project that provide many fishing opportunities. However, the human community has impacted this resource over the years with changes to the river's hydrology and a variety of point and non-point source pollution entering the river. The backwater effect from Chickamauga Dam and Lake has altered the ecology of the Hiwassee River within the project reach (HRM 10-18) from a free-flowing riverine system to a slower, deeper lacustrian system. Native aquatic organisms such as the Snail darter and freshwater mussels have found it difficult or in some cases impossible to adapt. It is unlikely that current conditions would change in the foreseeable future.

The construction of dams and the backwater effect in many tributary embayments have altered the sediment bed transport that affects many aquatic resources such as mussels and fish spawning beds. Riverine habitat was converted to lacustrine habitat throughout much of the Tennessee River and in the lower portion of the Hiwassee River. Riverine mussel populations were particularly vulnerable because of their sedentary condition. Many required specific flow conditions with gravel substrate characteristic of a riverine environment that is now limited to tailwaters below dams on the mainstem of the Tennessee River and major tributaries. In addition, dams allowed sediment and nutrients to accrete in the impounded sections. Both point and nonpoint source contaminants, and particularly large amounts of sediment from construction, agriculture, and poor land management practices, contributed to the accretion, nutrient, and contaminant loading. Regulatory programs set standards to protect water quality criteria for the designated uses of the rivers and limit point source discharges. BMP programs regulate many nonpoint sources. Dioxin had been of historical concern in fish tissue in the Hiwassee River since it had been a component of the Bowater paper mill discharge into the river. However, little dioxin was found in the sediments and the river has never been posted for dioxin.

Fish spawning habitat has been stressed over the years by the change from a free-flowing riverine system to a regulated water release program. Although the current resources appear to have adjusted somewhat to modified habitat conditions, migratory fish species appear to find it more difficult to reproduce. Migration to spawning sites upstream and downstream on the Hiwassee River has been impeded by dams. Currently, the only passage available for the migratory fish is through the locks on the mainstem of the Tennessee River.

Approximately 6% of the Tennessee River navigation channel requires periodic dredging of the same sites. Due to the continuously shifting bed loads, these sites are not preferred fish nesting

sites. Given the size of the Tennessee River the cumulative effects of dredging would have a negligible effect on this resource.

h. Determination of Secondary Effects on the Aquatic Ecosystem. The secondary effects on the aquatic ecosystem caused by dredging, such as turbidity and the volume of relocated sediments, would be imperceptible.

III. Findings of Compliance or Non-Compliance with Restrictions on Discharge.

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation. There were no adaptations of the Section 404(b)(1) Guidelines to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem. Several alternatives were studied. None of the alternatives, including "No Action" would have a less adverse impact on the aquatic ecosystem. Alternatives that were considered but were determined impracticable are listed below.

Upland Disposal. This would involve construction of a confined disposal facility (CDF) for containment of dredged material on property in the vicinity of the site. Dredged material would be placed in the CDF with a suction dredge.

Construction of a CDF would require the purchase of property in the vicinity of the site that is predominantly managed for recreation. The costs of purchasing or leasing suitable property, construction of dikes, suction dredging operations, and permanent site maintenance would require a sizeable capital investment and long term analyses that and are well beyond the scope of the proposed maintenance activity. Also, the funding and approval process for a new CDF would require extensive time, such that the navigation channel would become unusable. The footprint of a CDF could have a great impact on known and unknown cultural sites. As a result, this is not a practical alternative at this time.

Navigation Channel Relocation. Any relocation behind islands would require tremendous dredging. This existing navigation channel on the Hiwassee River is located in the deepest part of the river; therefore this is not a practical alternative.

Changing Reservoir Operations to Raise Minimum Pool Level. This alternative would eliminate the immediate need for maintenance dredging by raising the minimum pool by 2 feet. It would, however, greatly impact TVA's ability to control flood levels downstream at Chattanooga. In addition, this would only grant a few years reprieve before the area once again required attention. As a result, this is not a practicable alternative.

Open Water Disposal at a Remote Site. This alternative would involve clamshell dredging and transport of the material by dump scow to a remote site a few miles downstream. Alternate disposal sites were located along the main channel of the Hiwassee River near the mouth of Rogers Creek. These areas were not well protected from high river flow and would likely allow the sediment to easily migrate downstream. As a result, this is not a practical alternative.

Privatization of Channel Maintenance. Commercial towing companies could employ private dredging companies to perform channel maintenance work on the Hiwassee River. However, this would encourage inconsistent dredge and disposal operations, and the Nashville District, Corps of Engineers, is responsible for performing maintenance dredging in accordance with the 1962 Memorandum of Agreement between TVA and the Corps of Engineers. The Corps has access to the appropriate equipment, personnel, and historical records of previous maintenance activities. Therefore use of another dredging operation is considered impracticable.

c. Compliance with Applicable State Water Quality Standards. All applicable state water quality standards would be met with use of appropriate equipment used by the Corps.

d. Compliance with Applicable Toxic Effluent Standard of Prohibition Under Section 307 of the Clean Water Act. The disposal operations would not violate Section 307 of the Clean Water Act.

e. Compliance with the Endangered Species Act. Based on available information, there are no known Federally listed threatened or endangered species in the project areas and a No Effect determination can be supported.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972. Not applicable.

g. Evaluation of Extent of Degradation of the Waters of the United States.

(1) Significant Adverse Effects on Human Health and Welfare. The proposed placement of fill material would not result in any significant adverse impacts on human health and welfare, including municipal and private water supplies, recreation and commercial fishing.

(2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems. Life stages of aquatic and terrestrial species would not be adversely affected.

(3) Significant Adverse Effects on Aquatic Ecosystem diversity, Productivity, and Stability. No significant adverse effects on aquatic ecosystem diversity, productivity, or stability would occur.

(4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values. Recreational, aesthetic, and economic values would not be adversely affected.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the discharge on the Aquatic Ecosystem. Appropriate steps to minimize potential adverse impacts of the discharge on the aquatic ecosystem of the Hiwassee River include sound engineering design. In addition, placing of the fill material would be governed by detailed specifications to prevent pollution and damage to the aquatic system as a result of dredging and disposal operations.

i. On the Basis of the Guidelines, the Proposed Disposal Site for the Discharge of Dredged or Fill Material is: specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

FINDING OF COMPLIANCE WITH CLEAN WATER ACT
SECTION 404 (B) (1) GUIDELINES
FOR
OPEN CHANNEL MAINTENANCE DREDGING AND DISPOSAL
HIWASSEE RIVER MILES 10-18
MCMINN AND BRADLEY COUNTIES, TENNESSEE

1. No significant adaptations of the Clean Water Act Section 404 (b) (1) guidelines were made relative to this evaluation.

2. An Open water disposal site was identified for this project.

3. Dredging would not occur in a state designated mussel sanctuary.

4. Use of the selected disposal site would not harm any endangered species or their critical habitat.

5. The proposed disposal of dredged material would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability and recreational, aesthetic and economic values would not occur.

6. On the basis of the guidelines the proposed disposal site for the discharge of dredged material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.

Date: _____ _____

Steven J. Roemhildt, P.E.
LTC, EN
Commanding

Appendix D
Public Notice No. ____
EA Notice of Availability
And Responses

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

June 15, 2006

Mr. Douglas L. Radley, AICP, Chief
Project Planning Branch
Nashville District, U.S. Army Corps of Engineers
ATTN: CELRN-PM-P (Joy Broach)
Post Office Box 1070
Nashville, Tennessee 37202-1070

Dear Mr. Radley:

HIWASSEE RIVER DREDGE PROPOSALS, CHICKAMAUGA RESERVOIR, BRADLEY AND MCMINN COUNTIES, TENNESSEE

Thank you for informing us, by letter of May 24, 2006, of the proposed maintenance dredging in two locations on the Hiwassee River. Because the proposal involves work in the Tennessee River, would assist TVA in carrying out its statutory obligation and is in furtherance of the TVA Act, TVA wishes to be a cooperating agency in the NEPA review. In addition, the dredge disposal site may require approval under Section 26a of the TVA Act and involve TVA Chickamauga Reservoir property.

The environmental assessment should note that Ledford Island is actively managed for waterfowl food plots by the Tennessee Wildlife Resources Agency. In addition, TVA is involved in stabilizing archaeological sites on Ledford Island adjacent to the dredge spoil disposal area.

Should you have any questions, please contact Harold M. Draper at 865-632-6889 or hmdraper@tva.gov.

Sincerely,

Jon M. Loney

Jon M. Loney, Manager
NEPA Policy
Environmental Stewardship and Policy

From: Fisher, Daniel C [dcfisher@tva.gov]
Sent: Tuesday, August 15, 2006 6:44 AM
To: Broach, Joy I LRN
Subject: Hiwassee Dredging - T&E & Wetland Impacts - comments
Joy - this is per our biologist / forester yesterday

Dan

Dan Fisher, Land Use Specialist
Chickamauga / Hiwassee Watershed Team
1101 Market Street, PSC 1E-C
Chattanooga, Tennessee 37402-2801
423/876-4177 (Phone); 423/876-4016 (Fax)

Dan;

A review of TVA's Natural Heritage Database shows no known occurrences of federally or state listed species in the vicinity that would potentially be impacted by the proposed work. There was a small Heron colony in the immediate vicinity of the proposed deposition site, but has been inactive for the past few years. However, with TWRA's extensive involvement on the island, their input would be the most valuable to ensure that their operations are not jeopardized.

Forested/scrub-shrub/emergent wetlands occur in many areas around the edges of Ledford Island, along with extensive aquatic bed wetlands. There should be no spoil deposited in these areas (on the island or along the perimeter of the island), however, spoil deposited in the water on the south side of the island, away from the emergent vegetation would only result in temporary impacts to the aquatic bed wetlands which would be negligible.

Martin High
Forester
PSC 1E-C
(423) 876-4098

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

July 10, 2006

Lt. Colonel Steven J. Roemhildt
District Engineer
U.S. Army Corps of Engineers
P.O. Box 1070
Nashville, Tennessee 37202-1070

Attention: Mr. Douglas L. Radley, A.I.C.P., Project Planning Branch

Dear Colonel Roemhildt:

Thank you for your letter of May 24, 2006, concerning preparation of an environmental assessment for proposed maintenance dredging in the Hiwassee River in Bradley and McMinn counties, Tennessee. Fish and Wildlife Service biologists have reviewed the information submitted and we offer the following comments.

The proposed action involves dredging in the Hiwassee River between river miles 10 and 18 near Charleston to maintain a navigable channel. Dredged material may be disposed of in open water in the back chute of Ledford Island (River Mile 12).

According to our records, there are no federally listed or proposed endangered or threatened species in the impact area of the proposed action. Therefore, we anticipate no effects to listed species from proposed dredging and disposal activities.

Information available to us indicates that forested wetlands exist on Ledford Island. Disposal of dredged material in the back chute of the island could potentially alter the hydrology and adversely impact those wetlands. We recommend that an evaluation be done to determine the presence of wetlands on Ledford Island and the potential impacts of disposal in the back chute to the wetland habitat.

If dredged material is placed at Ledford Island, it is likely to move downstream during high water events, necessitating additional future dredging. We recommend that you consider selecting an upland site for disposal of the dredged material and develop a plan to stabilize the material to preclude it from reentering the river.

Thank you for the opportunity to comment at this early planning stage. If you have any questions regarding our response, please contact Jim Widlak of my staff at 931/528-6481, ext. 202.

Sincerely,

for Lee A. Barclay, Ph.D.
Field Supervisor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4

Sam Nunn Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303 - 8960

June 26, 2006

Mr. Douglas L. Radley, A.I.C.P
Project Planning Branch
U.S. Army Corps of Engineers
Nashville District
P.O. Box 1070
Nashville, TN 37202-1070

SUBJ: Proposed Environmental Assessment for Maintenance Dredging and Disposal of the Hiwassee River between Miles 10 and 18 near Charleston, TN, in McMinn and Bradley Counties.

Dear Mr. Radley:

This letter is response to your request for scoping comments in a letter dated May 24, 2006, regarding an environmental assessment (EA) for the above-referenced proposed project. The EA would evaluate the proposed maintenance dredging that is limited to within the navigation channel between Hiwassee River Miles 10 and 18 near Charleston, Tennessee, in McMinn and Bradley Counties. Open water disposal in the back chute of Ledford Island is being considered. The U.S. Environmental Protection Agency (EPA), Region 4 offers the following comments for consideration in developing the EA for the proposed project. Our comments will focus on water quality concerns as it relates to federal regulatory requirements of the Clean Water Act (CWA).

Water quality can be potentially impacted in a variety of ways including: the removal of benthic communities; short-term increases in the level of suspended sediment which can give rise to changes in water quality which can effect flora and fauna, such as increased turbidity and possible release of organic matter, nutrients, and or contaminants depending upon the nature of the material in the dredging area; and settlement of suspended sediments which can result in the smothering or blanketing of benthic communities.

In order to fully assess the extent of potential water quality impacts of the proposed project, additional information is needed as outlined herein. The following factors can influence the potential effects of maintenance dredging and disposal and should be discussed in the EA: magnitude and frequency of activity; method of dredging and disposal; channel size and depth; size, density and quality of material; background levels of water and sediment quality, suspended

solids, and turbidity; current speed and direction; rate of mixing; and presence of sensitive animal and plant communities (including birds, sensitive benthic communities, and fish).

The proposed project falls within a designated EPA Region 4 Priority Watershed for the State of Tennessee, the Hiwassee River watershed. The EPA Region 4 Priority Watersheds were developed as part of EPA's Watershed Management Program in conjunction with the eight southeastern states in order to optimize program resources to more effectively achieve environmental results. EPA, Region 4 has joined with others at the state and local level to promote a national watershed approach as a means to restore and maintain the physical, chemical, and biological integrity of our nation's water.

A primary tool that is used to gage the effectiveness of the watershed approach is Tennessee's 303(d) list of impaired waterbodies which is developed by the Tennessee Department of Environment and Conservation, Division of Water Pollution Control. The segment of the Hiwassee River (in McMinn and Bradley Counties) that is affected by the proposed project is currently impaired for coliform bacteria. In order to meet water quality for coliform bacteria impairments, a Total Maximum Daily Load was approved by EPA, Region 4 on January 23, 2006. The impairment sources are local failing sewer collection system(s) and washoff from pasture grazing. Therefore, the maintenance dredge (and any other vessels) involved in this operation should not discharge untreated sanitary or other wastewater in the river that would violate this standard. Although the proposed Hiwassee dredging and disposal areas are not listed on the currently approved 2004 303(d) list or the proposed 2006 list as impaired for sediment or siltation, both approved and proposed lists do include upstream areas of the Hiwassee River (in Polk County) for "habitat loss due to stream flow alteration" from the effects of the upstream impoundment (the Tennessee Valley Authority's Apalachia Dam). The proposed project should, therefore, not operate in a manner which would impair habitat loss due to flow alteration further downstream from the dam.

The discharge of dredged or fill material is regulated under Section 404 of the CWA. In order to receive a Section 404 permit from the Corps of Engineers, in accordance with the CWA Section 404(b)(1) Guidelines (the "Guidelines") [(Title 40 of the Code of Federal Regulations (CFR), Section 230], the applicant must demonstrate that the discharge is unavoidable and the least environmentally-damaging practicable alternative that will fulfill the basic project purpose has been selected. Generally, projects that avoid or minimize discharges of dredged or filled material into "waters of the U.S.," including wetlands, are presumed to have less adverse impact to the aquatic environment. To demonstrate compliance with the Guidelines, the applicant must perform an analysis of practicable alternatives [40 CFR 230.10(a)]. Pending an evaluation of the factors influencing the potential effects of maintenance dredging and disposal and potential impacts (as discussed above), other alternatives to open water disposal may need to be examined, including upland disposal. It is important that any testing and analysis of dredged materials be fully coordinated with all applicable state and federal regulatory agencies.

Section 230.10(b) prohibits discharges that violate certain other environmental standards including discharges that do not cause or contribute to violations of state water quality standards including antidegradation, violate toxic effluent standards under Section 307 of the CWA, jeopardize the continued existence of or critical habitat for endangered or threatened species, or violate requirements of marine sanctuaries. Section 230.10(c) prohibits discharges that cause or

contribute significant degradation of waters of the U.S. Significant degradation can include individual or cumulative impacts to human health and welfare; fish and wildlife; ecosystem diversity, productivity, and stability; and recreational, aesthetic, or economic values. The discharge and disposal of dredged material should be fully evaluated in light of these requirements. The reach of the Hiwassee River impaired due to habitat loss due to stream flow alteration in Polk County (near the Apalachia dam) has three listed species according to the "2004 Federally Listed Species Occurrence and Critical Habitat Data" document provided by the U.S. Fish and Wildlife Service, Cookeville Field Office. The three listed species are the Snail darter, Cumberland bean, and Tan Riffleshell. The reach of the Hiwassee River impaired due to coliform bacteria in Bradley and McMinn Counties has one species: the Snail darter. The EA should address any potential effects of the proposed project on habitat for these listed species.

Thank you for the opportunity to provide scoping comments on the proposed EA for this project. Should you have any questions regarding our comments, please contact Darryl Williams at (404) 562-9297.

Sincerely,

Ronald J. Mikulak, Chief
Wetlands Regulatory Section

cc: See Enclosed List

CC List:

Dr. Lee Barclay, Field Supervisor
U.S. Fish and Wildlife Service
446 Neal Street
Cookeville, TN 38501

Dan Eager, Manager
Tennessee Department of Environment
& Conservation
Division of Water Pollution Control
7th Floor, L&C Annex
Nashville, TN 37243-1534

Gary Myers, Executive Director
Tennessee Wildlife Resources Agency
Ellington Agricultural Center
P.O. Box 40747
Nashville, TN 37771-0465

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

July 31, 2006

Nashville District
U.S. Army Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070
Attention: Joy Broach

Dear Ms. Broach:

The Tennessee Wildlife Resources Agency has received notification by letter from your office informing us that the U.S. Army Corps of Engineers is preparing an Environmental Assessment in accordance with the National Environmental Policy Act to evaluate the impacts of proposed maintenance dredging and disposal activities between Hiwassee River Miles 10 and 18 near Charleston in McMinn and Bradley Counties, Tennessee. It is being considered to dispose of the dredged material in open water in the back chute of Ledford Island

The Tennessee Wildlife Resources Agency requests that dredged materials be placed on an upland disposal site that will be stabilized with vegetation to prevent the erosion of these materials back into the waterway. Ledford Island is managed for waterfowl habitat by the Tennessee Wildlife Resources Agency and the food plot fields are leased to a sharecropper. We request that the dredged material not be placed in the food plot fields as damage to the crops could occur and costs to reshape the fields could be signi ficant. We are concerned that if dredged material is placed on the island, if a significant flood event were to occur, this material could erode back into the channel. We also request that dredging activities not occur during the primary fish spawning and nesting period of March 15th through June 15th.

Thank you for the opportunity to comment.

Sincerely,

Robert M. Todd

Robert M. Todd
Fish and Wildlife Environmentalist

cc: Bobby Brown, Region III Habitat Biologist
John Mayer, Region III Manager
USFWS, EPA, WPC

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Heritage
7th Floor L&C Annex
401 Church Street
Nashville, Tennessee 37243-0447
Phone 615/532-0431 Fax 615/532-0046

May 31, 2006

Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070
ATTN: Joy Broach

RE: Proposed Maintenance Dredging, Hiwassee River Miles 10 -18

Dear Ms. Broach:

The Division of Natural Heritage, Tennessee Department of Environment and Conservation, appreciates the opportunity to review and provide comment on the above referenced project. We have reviewed the proposed project and maps and do not find any occurrences of rare, threatened or endangered species from the immediate project area. However, our review did return a Heron Rookery that has been documented from Ledford Island, near River Mile 10.7. The DNH requests that every effort be made to avoid adverse impacts to the rookery should it be documented from the immediate project area. Please keep in mind, that not all areas of Tennessee have been surveyed and that a lack of records for any particular area is not a statement that rare species are absent from that area.

Thank you for considering Tennessee's rare species throughout the planning of this project. Should you have any questions, please do not hesitate to contact me at (615) 532-0440.

Sincerely,

Kirstin Condict
Data Manager

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

May 31, 2006

Mr. Douglas Radley
U.S. Army Corps of Engineers, Nashville District
Project Planning Branch
Post Office Box 1070
Nashville, Tennessee 37202-1070

RE: COE-N, HIWASSEE R. DREDGING/MILES 10-18, UNINCORPORATED, MCMINN COUNTY

Dear Mr. Radley:

The above-referenced undertaking received on Friday, May 26, 2006 has been reviewed with regard to National Historic Preservation Act compliance by the participating federal agency or its designated representative. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

In order to complete our review of this undertaking, this office will need to receive from you the review comments and recommendations of your agency's cultural resources staff regarding this undertaking's potential to affect historic properties.

Upon receipt of the additional information, we will complete our review of this undertaking as expeditiously as possible. Until such time as this office has rendered a final comment on this project, your Section 106 obligation under federal law has not been met. Please inform this office if this project is not funded or canceled by the federal agency. Questions and comments may be directed to Jennifer M. Barnett (615) 741-1588, ext. 17.

Your cooperation is appreciated.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jmb

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1070
NASHVILLE, TENNESSEE 37202-1070

JUN 15 2006

IN REPLY REFER TO
Project Planning Branch

Mr. Herbert Harper, Director
Tennessee Historical Commission
Deputy State Historic Preservation Officer
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. Harper:

The U.S. Army Corps of Engineers, Nashville District, recently provided your office a project scoping document for dredging in the Hiwassee River in McMinn County. Your response of May 31, 2006, requested the review comments and recommendations of the District's cultural resource staff.

The proposed dredging will take place within the existing, previously dredged channel of the Hiwassee River at specific locations between river miles 10 to 18. Proposed disposal of dredged material is by in-water disposal with placement in the deepest part of the back chute of Ledford Island. For your review I have enclosed two pages taken from the *COE and TVA Sediment Survey Report* for this project that contain mapped depictions of the dredge and spoil sites. On the second page (page 11 of the report) the color red on the maps shows sediments that have accumulated within the navigation channel (See HRM 11.8, 12.4, 12.7, and 17.1). The disposal location is also noted between river miles 11.6 and 12.1.

This proposal will only involve areas of previous dredge and disposal; therefore, it is the Corps finding that no historic properties occur within the project's "area of potential effects" that will be affected. Your concurrence is requested.

Sincerely,

Robert Karwedsky
Archeologist, Project Planning Branch

Enclosure

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

June 29, 2006

Mr. Robert Karwedsky
U.S. Army Corps of Engineers, Nashville District
Project Planning Branch
Post Office Box 1070
Nashville, Tennessee 37202

RE: COE-N, HIWASSEE R. DREDGING/MILES 10-18, UNINCORPORATED, MCMINN COUNTY

Dear Mr. Karwedsky:

The Tennessee State Historic Preservation Office has reviewed the above-referenced undertaking received on Thursday, June 22, 2006 for compliance by the participating federal agency or applicant for federal assistance with Section 106 of the National Historic Preservation Act. The Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, we concur that there are no National Register of Historic Places listed or eligible properties affected by this undertaking. This determination is made either because of the location, scope and/or nature of the undertaking, and/or because of the size of the area of potential effect; or because no listed or eligible properties exist in the area of potential effect; or because the undertaking will not alter any characteristics of an identified eligible or listed property that qualify the property for listing in the National Register or alter such property's location, setting or use. Therefore, this office has no objections to your proceeding with the project.

If you are applying for federal funds, license or permit, you should submit this letter as evidence of compliance with Section 106 to the appropriate federal agency, which, in turn, should contact this office as required by 36 CFR 800. You may direct questions or comments to Jennifer M. Barnett (615) 741-1588, ext. 17. This office appreciates your cooperation.

Sincerely,

Herbert L. Harper

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jmb

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
WATER POLLUTION CONTROL
401 CHURCH STREET
7TH FLOOR L&C ANNEX
NASHVILLE, TN 37243

June 22, 2006

Joy Broach
Department of the Army
Nashville District, Corps of Engineers
PO Box 1070
Nashville, Tennessee 37202-1070

Re: Maintenance Dredging in the Hiwassee River

Dear Ms. Broach:

Thank you for your recent request for preliminary information on the above referenced proposed maintenance dredging project in McMinn and Bradley counties, relative to any potential environmental impacts or concerns the Division of Water Pollution Control (Division) may have. Thank you also for the additional information and further discussion that we had on our phone conversation on June 21, 2006.

The Division has delegated authority from the U.S. Environmental Protection Agency to administer certain portions of the *Clean Water Act.* This Division also administers requirements of the *Tennessee Water Quality Control Act of 1977* ("ACT"). The programs administered by this Division that may be applicable to the dredging project include programs promulgated by Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control including *General Water Quality Criteria, Chapter 1200-4-3, Use Classification for Surface Waters, Chapter 1200-4-4*, and *Aquatic Resource Alteration, Chapter 1200-4-7* (ARAP). Please be advised that the applicant is responsible to determine all regulatory programs that are applicable to this project.

The "ACT" requires that permits be acquired to perform certain activities. Permit conditions are placed on activities proposed by the applicant. These conditions are intended to protect water quality. Specifically, Section 69-3-108(a) of the "ACT" requires acquisition of permits prior to initiation of activities listed in Section 69-3-108(b). The listed activities must be conducted in accordance with conditions of the permit(s).

The dredging of material from the Hiwassee River at the location specified in your letter of May 24, 2006, holds some concern for the Division. The Hiwassee River, downstream of the Olin Corporation plant, has had a history of issues with mercury. The division is concerned about the dredging and disposal of potentially contaminated sediment from the Hiwassee River.

Because of the uncertainty of the chemical composition of the sediment in the Hiwassee at the proposed location is unknown, the Division would request that a chemical analysis of sediment profiles from the area to be dredged be performed prior to the dredging. The sediment profiles will allow the determination of wether or not the depth of sediment removal will affect mercury laden sediments. This, along with the specification of the method of dredging, amount of sediment to be removed, and location of disposal site, would aid in the determination of environmental impacts of dredged material disposal and to determine the impact of potentially large amounts of suspended sediment in the Hiwassee River.

Your letter stated that the back chute of Ledford Island is being considered as a disposal site. The Division would request additional information regarding exactly how the disposal of the dredged material will occur. (e.g. will the disposal area be isolated so that sediment will not be dispersed into the surrounding water or is the dredged sediment going to simply be deposited into the shallow water?) The details of the proposed maintenance project will be further reviewed by the division during the Aquatic Resource Alteration Permit review process. The acquisition of the above information prior to application would be beneficial.

We appreciate your offer to address these issues through the environmental assessment process. If you have any questions regarding these comments, please contact Dick Urban at (423) 634-5702.

Sincerely

Regan McGahen
Environmental Specialist
Division of Water Pollution Control

cc: File
Robin Cathcart, Environmental Policy Analyst, TDEC
Richard Urban, Water Pollution Control Manager, Chattanooga Environmental Field Office

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Air Pollution Control
9th Floor, L & C Annex, 401 Church Street
Nashville, Tennessee 37243-1531
Telephone: (615) 532-0554

June 9, 2006

Mr. Douglas L. Radley, A.I.C.P.
Chief, Project Planning Branch
Department of Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

Re: Letter of May 24, 2006 regarding dredging of Hiwassee River in McMinn and Bradley Counties

Dear Mr. Radley:

This is in response to your letter dated May 24, 2006 regarding the environmental impact of dredging the Hiwassee River between miles 10 and 18 near Charleston, TN. Impact on ambient air quality from this project should be minimal. The greatest impact will probably be emissions from internal combustion engines in the dredging equipment. These emissions can be minimized by properly maintaining the equipment.

Thank you for allowing me the opportunity to comment on this project.

Sincerely,

Quincy N. Styke III

for Barry R. Stephens, P.E.
Director
Tennessee Division of Air Pollution Control

CHATTANOOGA ENVIRONMENTAL FIELD OFFICE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
540 McCALLIE AVENUE, SUITE 550 - STATE OFFICE BUILDING
CHATTANOOGA, TENNESSEE 37402
(423) 634-5745 STATEWIDE 1-888-891-8332 FAX (423) 634-6389

May 30, 2006

Mr. Douglas L. Radley, A. I. C. P.
Chief, Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

RE: Hiwassee River Dredging, Miles 10 to 18, Bradley and McMinn Counties, Tennessee

Dear Mr. Radley:

The Division of Underground Storage Tanks (Division) has received the correspondence dated May 24, 2006, regarding the proposed "dredging and disposal activities...between Hiwassee River Miles 10 and 18 near Charleston, Tennessee".

The Division is not presently aware of any circumstances relative to the UST Program which might adversely affect the dredging activities as described in the referenced correspondence and attachments.

Should you have additional questions concerning this correspondence, please contact me at (423) 634-5737.

Sincerely,

William Randy Slater

William Randy Slater
Field Office Manager
Division of Underground Storage Tanks

c: Stanley R. Boyd, UST Division Director c/o Cheryl M. White
UST Central Office Technical File – Bradley County
Chattanooga EFO - Bradley County General File

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF GEOLOGY
13th Floor, L & C Tower, 401 Church Street
Nashville, TN 37243
Telephone: 615-532-1502, FAX: 615-532-1517, E-mail: Ronald.Zurawski@state.tn.us

June 5, 2006

Douglas L. Radley, A.I.C.P.
Chief, Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P. O. Box 1070
Nashville, TN 37202-1070

Re: Environmental Evaluation for Proposed Dredge and Disposal Sites Between Hiwassee River Miles (HRM) 10 to 18 in McMinn and Bradley Counties

Dear Mr. Radley:

We have reviewed the proposed project and determined that there are no adverse environmental impacts on any matters under our jurisdiction, specifically, the geology and potential mineral deposits.

Although the Tennessee Division of Geology has not yet mapped the geology of the Charleston, Tennessee 7.5-minute quadrangle in detail, according to the east-central sheet of the Geologic Map of Tennessee published by the Division of Geology in 1966, the geology in this area generally consists of Cambrian and Ordovician limestones and shales. It is likely that the geology of the specific sites consists of Quaternary alluvial deposits, and is not expected to pose any adverse environmental concerns or problems. No potential mineral deposits are known to occur in the proposed project area.

Thank you for including us in the Environmental Evaluation process for this project.

Sincerely,

Ronald P. Zurawski

Ronald P. Zurawski
State Geologist and Director

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Recreation Educational Services
10th floor - L&C Tower
401 Church Street
Nashville, Tennessee 37243

June 21, 2006

Mr. Douglas L. Radley, AICP
Chief, Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

RE: Corps of Engineers (COE) - Maintenance Dredging on the Hiwassee River

Dear Mr. Radley:

Thank you for the opportunity to comment on the above referenced document.

We would encourage the COE to include in its' scope for the proposed Environmental Assessment (EA) for the future dredging on the Hiwassee River between Miles 10 and 18 near Charleston, Tennessee, the opportunity to have that EA reviewed by appropriate recreational agencies or departments from the local, state or federal level. Also to any interested individuals, the opportunity to comment on the proposed EA, on how the dredging on the Hiwassee River would impact the recreational utility or conservation value of that portion of the river that would be impacted by dredging operations and the proposed open water disposal site.

After a research of our office's files, we can locate no occasion where a grant administrated by this Division would be impacted by the proposed dredging or disposal in the effected areas on the Hiwassee River. Therefore, we have no involvement in the subject area from a state or federal level.

Sincerely,

Mark Tummons, CPRP
Director

MT/lh

Copy: Ms. Joy Broach, COE, Nashville District
Anne Marshall, RES, East TN PARTAS Consultant

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

JAMES H. FYKE
COMMISSIONER

PHIL BREDESEN
GOVERNOR

June 2, 2006

Ms. Joy Broach
Army Corps of Engineers
P.O. Box 1070
Nashville, TN 37202

RE: Proposed dredging and disposal on the Hiwassee River

Dear Ms. Broach,

The Department of Environment and Conservation received information on the above-referenced project dated May 24, 2006 (received May 25, 2006). The Department will review this material and comment as appropriate.

If you have any questions, please contact our Environmental Policy Office at (615) 532-0929.

Sincerely,

Robin Cathcart
Environmental Policy Office

cc: File 06-046

STATE OF TENNESSEE
ECONOMIC & COMMUNITY DEVELOPMENT

BUSINESS DEVELOPMENT DIVISION

June 6, 2006

Joy Broach
Dept. of the Army
Corps of Engineers
P. O. Box 1070
Nashville, TN 37202-1070

Dear Ms. Broach:

We received a letter dated May 24, 2006, from the U.S. Army Corps of Engineers regarding proposed maintenance dredging of the Hiwassee River. We appreciate the opportunity to comment on the proposed maintenance, specifically the dredge site located along HRM 16.5-17.5. The Hiwassee River industrial park is located south of and proximate to the proposed dredge site above and this department and the Cleveland/Bradley County Chamber of Commerce have had recent industrial prospects inquire as to the viability of and regulatory requirements for locating water intake and effluent wastewater structures in this stretch of the river. Therefore, we respectfully request that any proposed maintenance dredging be coordinated with:

Gary L. Farlow
Vice President Economic Development
Cleveland/Bradley County Chamber of Commerce
225 Keith St.
P.O. Box 2275
Cleveland, TN 37320-2275
Phone: 423-472-6587

Sincerely,

Wilton Burnett, Jr., P.E.
Director of Special Projects

cc: Gary L. Farlow

312 EIGHTH AVENUE NORTH, ELEVENTH FLOOR
NASHVILLE, TENNESSEE 37243
TELEPHONE: 615.741.3282 — FAX: 615.741.5829
HTTP://WWW.TNECD.GOV

SMOKY MOUNTAIN TRANSFER CORP.
9725 COGDILL ROAD, SUITE 203
KNOXVILLE, TENNESSEE 37932
Phone: (865) 966-8222
Fax: (865) 777-3633

June 20, 2006

Mr. Douglas L. Radley, A.I.C.P.
Chief, Project Planning Branch
Department of the Army
Nashville District Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

Dear Mr. Radley:

I am writing you in response to your letter dated May 24th, 2006.

Thank you for keeping us updated on the planning end for the Corp of Engineers, and soliciting responses for the Environmental Assessment. Our company operates a barge unloading facility on the Hiwassee River, specifically on the stretch you mention in your letter. That is why we have an interest in this study.

Smoky Mountain Transfer, located in Charleston, TN, is responsible for the unloading and stockpiling of salt barges. Then around ninety percent of the material moves to Olin Chemical just down the road from the facility. The other ten percent is shipped to various industrial and government end users. The Bowater plant is also dependant of this process, because they receive Chlorine that Olin makes for their paper. These three facilities make up the vast majority of the economy for the small town of Charleston, TN.

Keeping the Hiwassee River maintained and navigable is a major issue to the chain of supply for Charleston, TN. We must be able to continuously take in barges and send them out, in order for the process to keep running. If we were unable to handle barges on the Hiwassee ten jobs would be affected immediately. This could also make Olin Chemical very inefficient, which could lead to the closing of the plant.

The Corps of Engineers and Smoky Mountain Transfer have developed a relationship since we have operated that facility, and the corps has always done a very good job for us. We would like to continue this relationship in working together for many years to come.

Please keep the community of Charleston, TN, and our company in mind during your upcoming environmental assessment, and the decision for maintenance dredging. This is very important to a lot of people.

Thank you for your time,

Timothy K. Patterson II

Tim "Deuce" Patterson
Smoky Mountain Transfer Corp.

Olin
CHLOR ALKALI PRODUCTS
1186 Lower River Road, NW
Charleston, TN 37310

June 23, 2006

Doug Radley
Chief
Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

Attention Ms. Joy Broach

Subject: Support of Maintenance Dredging on the navigation channel between Hiwassee River mile 10 and 18 near Charleston, TN.

We support the authority of the Corps of Engineers to improve and maintain a navigable channel on the Hiwassee River pursuant to Public Law 525. Reliable river navigation is critical to the operation of our facility We depend on river transport of our raw materials, including approximately 250 to 300 barges of salt each year and an additional 50 barges of product. During low water periods, we do experience difficulty with barges grounding. The added time we need to address the low water situation adds to our cost of business.

River transportation is safe, economical, and protective of the environment. If we could not ship by barge, we would add approximately 400 trucks a week to already overburdened roadways. Since barge transportation is more efficient, fuel and other costs are lower compared to highway transport. By decreasing the number of trucks on the road, river shipment is desirable and environmentally responsible.

We appreciate the work of the Corps to maintain river navigation and support this project. Please let us know what more we can do to further this effort.

Sincerely,

Tom Tirabassi

Office of the County Mayor

John M. Gentry
County Mayor

6 East Madison Avenue
Athens, Tennessee 37303

Phone
(423) 745-7634

June 19, 2006

Douglas L. Radley, AICP
Chief, Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
PO Box 1070
Nashville, TN 37202-1070

Dear Mr. Radley:

Thank you for your letter soliciting comments regarding the planned maintenance dredging and disposal activities on the Hiwassee River.

Please be aware that McMinn County owns 250 acres of property along the Hiwassee River that includes the Camp Cherokee area. This proposed activity appears to have only minimal impact on McMinn County regarding river navigation and recreation. However, any current or future projects and their associated environmental impacts on land use, navigation, erosion, safety, and recreation would be of immediate concern to McMinn County. Please feel free to contact this office regarding input on any such issues.

Again, thank you for your notification.

Sincerely,

Joe Guy
Assistant to the County Mayor

JG/jg

cc: Jay Broach

Appendix E
Tennessee Water Quality Certification

Appendix F
2005 Sediment Survey Report